DOCUMENT RESUME

ED 186 466 TM 800 169

AUTHOR Havlicek, Larry: And Others
TITLE Kansas Learner Needs Assessment Study. Grades Six and Twelve. Final Report, 1972-1978.
INSTITUTION Kansas Univ., Lawrence. School of Education.
SPONS AGENCY Kansas State Dept. of Education, Topeka.
PUB DATE Dec 78
NOTE 322p.

EDRS PRICE MF01/PC13 Plus Postage.
DESCRIPTORS *Academic Achievement; Achievement Tests; Basic Skills; *Educational Assessment; Elementary Secondary Education; Grade 6; Grade 12; Longitudinal Studies; *Needs Assessment; Practical Arts; Science Education; *Scores; Social Sciences; State Programs; *State Surveys; Student Needs; *Testing Programs
IDENTIFIERS *Kansas; Kansas Learner Needs Assessment Study

ABSTRACT

Over 6,000 sixth- and twelfth-grade students from 33 school districts in Kansas were tested in 13 areas of academic and non-academic skills: arts and humanities; communication; mathematics; career preparation; consumer preparation; environmental education; health; nutrition; preparation for a changing society; safety; self concept; science; and values and citizenship. The testing program, mandated by the state of Kansas and the Elementary and Secondary Education Act Title III, was conducted between 1974 and 1978. The study was intended to describe the performance of Kansas' students, compare it to national norms, and indicate areas of strength or weakness which may be useful in educational planning. (For each of the areas tested, a description of the tests used, a summary of test results for different objectives, and a comparison of national and Kansas scores are presented. The final chapter summarizes the entire report). (GDC)

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Report of the

Kansas Learner Needs Assessment Study

Grades Six and Twelve

1972-1978

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Prepared for the
Kansas State Department of Education

by the
Department of Educational Psychology and Research
School of Education
The University of Kansas

December, 1978

TM800 169

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Preface

This report is the result of a six-year State-wide Learner Needs Assessment Study of grades-six and -twelve in Kansas. The study was carried out by the Department of Educational Psychology and Research at the University of Kansas under contractual agreements with the Kansas State Department of Education.

Begun late in 1972, the first two years of the project centered around the organization and development of the needs assessment design; and the identification and construction of test instruments. Actual testing began in April of 1974 and continued through April of 1978. In all approximately 6000 students were tested in thirteen content areas.

This project was primarily the work of Dr. Larry Havlicek, Professor of Educational Psychology and Research who served as Director and Dr. Anne Spangler who served as coordinator. This report was prepared by Dr. Havlicek, Barbara A. Huppee and Diana DeVore Johnson.

ACKNOWLEDGEMENTS

The successful completion of a project of the complexity and magnitude of the Kansas Learner Needs Assessment Study would not have been possible without the assistance and cooperation of many individuals and organizations. Although it is not possible to identify and give recognition to all of the individuals and groups who contributed to the project, the following deserve special recognition.

Mr. Philip S. Thomas, Director of Educational Improvement and Development and Director of ESEA Title IV Programs for the State of Kansas was very helpful in the implementation of the study. The ESEA Title III and Title IV State Advisory Council was helpful in providing valuable suggestions and review of the project.

Dr. D.B. Tracy developed the Kansas Learner Needs Assessment Plan and was coordinator of the project during the first year. Dr. Tracy also developed the Science and Mathematics tests which were used during the first cycle of the Study. Special recognition is given to Dr. Anne Spangler, who was coordinator of the project for four years. Dr. Spangler developed all of the tests which were locally produced for the project. Appreciation is also extended to the curriculum specialists within the Kansas State Department of Education for their assistance in reviewing objectives, tests, and the overall assessment plan. Barbara A. Huppee and Diana D. Johnson compiled the results of the study and did most of the writing for the final report.

The cooperation of the participating district superintendents and their staffs are appreciated as is the specific assistance given by local educational personnel who helped with the administration of the state-wide Kansas Learner Needs Assessment Study. At the school level, principals, teachers, and coun-

selors all played a very important role in implementing this study through their cooperation in the administration of the tests used throughout the study. Finally, thanks are extended to the sixth- and twelfth-grade students who participated in the study.

Glossary of Terms

Combined Average Percent-Correct This term is used to describe the average student performance on a learner objective. It is derived by adding together the difficulty levels of all test items which measure the learner objective, and dividing by the number of test items.

Grade Equivalent Score This is an interpolated score used to compare a sample group's performance with that of the national sample on a standardized test. It indicates the sample's performance by grade and month for the test given.

Histogram This is a graphic representation, using rectangles, of the performance outcomes of a sample group. For the purposes of this report it was used to illustrate means, percentile ranks, and grade equivalent scores.

Item Analysis A process of determining the difficulty and discrimination indices of a test.

Item Difficulty The percentage of respondents correctly answering the test item. A difficulty level of .80 would indicate that 80 percent of the respondants answered the question correctly.

Likert Scale A five-point scale developed by Rinsis Likert running along a continuum from strongly disagree to strongly agree.

Mean This is the arithmetical average determined by adding all the scores and dividing by the number of scores.

Norm Group The actual performance of a group used as a frame of reference for the interpretation of test scores.

Percentile Rank For a given score value, the percent of cases falling below that value.

Standard Deviation The measure of the spread of scores away from the mean in both a positive and negative direction.

I. THE KANSAS LEARNER NEEDS ASSESSMENT STUDY

INTRODUCTION

Chapter I

Introduction

Background

During the past fifteen years educators across this country have been levied with a whole new set of complex issues and concerns. New words have entered the professional vocabulary to accompany the social, political, economic, and philosophical forces which have interacted to produce teachers' strikes, increased federal spending, and diminishing student achievement. The adoption of words and phrases such as, "functional illiteracy", "competency-based education", and "accountability", has made the quality of education suspect in the eyes of citizens and professionals as well. This has been further exacerbated by school closings, declining enrollment, and local budget restrictions. In light of the confusion and problems faced by educators, people are asking and demanding to know, "What is going on"?

To meet these educational challenges of the seventies, a national effort was mounted to assess the status and quality of education. This national concern with educational assessment began in 1969 when the National Assessment of Educational Process was created to accomplish two basic goals: 1) to make available the first comprehenisve data on educational attainment of young Americans in ten learning areas; and 2) to measure any growth and decline that takes place in the attainments of young Americans. Over the years, the National Assessment Project has entailed a large-scale test construction effort as well as testing thousands of children and young adults across the entire country. Every year this project tests a stratified random sample of nearly 100,000 students. Thus, National Assessment is a major national educational assessment thrust.

Beyond the national movement there exists individual state assessment programs. In 1973 Beers and Campbell collected information from all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. Based on this information they found that, at that time, there were 30 operational programs of state educational assessment with some states having multiple assessment programs. Besides these 30 programs, 24 states or territories were in the process of planning some approach for carrying out statewide assessment. Thus, almost every state in the nation, as well as the Virgin Islands, Puerto Rico, and the District of Columbia were, as early as 1973, concerned with assesssing the quality of their educational programs.

This overwhelming emphasis with educational assessment is best explained by Arthur Olson (1973) in Developing a Large Scale Assessment Program,

> Americans currently are spending well over $100 billion dollars for all forms of education, public and private. This means that education has become one of America's biggest industries. As a result, the public wants some evidence concerning the quality of the educational programs.
>
> In a society where education is everybody's business, the adequacy of the system becomes everybody's business. If Americans today were satisfied with their society, if they were united in their perceptions of social priorities, and if they felt reasonably secure about their power to shape and control the future, there would be less concern today about the concept of accountability. Therefore, it is not surprising that education should come under increasing scrutiny from those on the left, the right, and in the middle, who feel a need to know what the schools are accomplishing, and how their accomplishments can be improved. Citizens, including professional educators now see assessment as a means "to get a handle" on what has been happening and on what should happen in terms of student performance. (P.1)

The Kansas Assessment Study

Kansas educators and citizens share this concern. They accept very seriously their responsibility to provide quality education for each child within the Kansas public school systems; and they recognize with equal seriousness

that the maintenance of a quality educational program requires continuous assessment, evaluation, and planning.

This report represents the commitment of the State of Kansas to continuous educational assessment and evaluation. It reports the combined results of a five-year testing program carried out between 1974 and 1978, during which time more than 6,000 sixth- and twelfth-grade students from 33 school districts underwent testing in 13 key areas of educational endeavor.

The mandate to assess the educational performance level of the State's elementary and secondary populations was specified in Title III of the Elementary and Secondary Education Act of 1965, P.L. 93-380, and by the Kansas State Board of Education when they adopted state-wide goals for education.

Among the sub-goals adopted by the Board in July, 1972 was:

> There should be ongoing educational needs assessment in the State of Kansas. Needs assessment studies should be accomplished in individual unified school districts in cooperation with and coordinated by the Kansas State Department of Education. The studies should be conducted in a manner that the results should provide both individual district and statewide educational needs profiles.

To meet these mandates the State Department of Education contracted with the Department of Educational Psychology and Research at the University of Kansas to accomplish the planning design and operational aspects of a multiple-year Kansas Needs Assessment Study. The Department of Educational Psychology and Research was selected because it had extensive experience in large scale data collection, test construction, and a variety of educational evaluation and research studies.

Because of the general nature of these charges many groups and levels within the public education system helped shape the nature and purpose of the Kansas Learned Needs Assessment Study. Among these were the Commissioner of

Education, the Director of Title III and IVc Federal Programs, departments within the State Department of Education, local district superintendents, school administrators, curriculum directors and teachers.

Two critical aspects of the evaluation included the purpose of evaluation and the subject matter to be assessed. In considering the purpose of the study the planning group was concerned not only with the acquisition of data depicting student performance levels, but also with the accumulation of information on a wide range of educational areas by which future program planning decisions might be made.

This second area of concern stemmed directly from the increased number of local education programs required by or developed under federal regulations and guidelines. The planning committee believed that in the absence of a quantitative needs data base, educational planners had no basis by which to plan programs, and as such, ran the risk of developing programs inappropriate to actual student needs. It was their contention that the creation of such a data base would provide a sound basis by which future program planning decisions might be made.

The Purposes of the Kansas Learner Needs Assessment Study

The purposes that the Kansas Learner Needs Assessment Study was designed to serve are:

1) To provide a quantitative overview of the educational performance level of the state's elementary and secondary grade students;

2) To diagnose specific performance strengths and weaknesses;

3) To provide information useful in making administrative decisions for change in curriculum or instructional procedures or emphasis; and

4) To build a student needs data base by which future statewide educational programs might be planned.

The Kansas Statewide Goals for Education

Looking specifically at the subject matter to be evaluated the planning group followed the course of topics outlined in the State-wide Goals for Education in Kansas. These goals, adopted in 1972 by the Kansas Board of Education, were the result of four years of comprehensive study carried out by the Kansas State Department of Education under independent research and contractual arrangements with Project SEEK of the Research and Grants Center at Kansas State Teachers College.

In 1969 Project SEEK began a major research effort to determine the status of education in the state with respect to goals and processes. Extensive data were collected on school and state population trends, welfare factors, school environment studies, student achievement levels, educational programs and services. The efforts of Project SEEK resulted in the identification of the educational needs of the students in the state of Kansas, the establishment of a system to determine critical educational needs and the design of a system for the continuous assessment of educational needs.

The results of Project SEEK were further refined by the efforts of the Kansas State Department of Education. In 1970 twenty-two regional meetings were held with administrators and local board members across the state to further discuss the needs and priorities of Kansas education. In 1971 eight Governors Work Conferences on Education and an Improving State Leadership in Education Conference were held to encourage students and citizens at large to voice their opinions about eight major concerns of education--finance, facilities, values, individual student needs, professional development, accountability, home-community-school relations, and career education.

Following these conferences, the Planning, Research, and Evaluation Section of the Kansas State Department of Education assigned the educational

concerns from all studies into logical groupings. The Department's Executive Committee wrote five goals to superimpose the logical groupings. The Department's total review suggested there should be only four major goals and 35 sub-goal topics.

The Planning, Research and Evaluation Section and Department members wrote a preliminary draft of the sub-goals. After revision the goals were sent to various people and institutions across the state for review. In addition, two sessions of a conference - "Focus on the Future" - were held in Hays and Kansas City for lay people and educators to peruse and respond to the goals.

Incorporating the suggestions from these conferences the goals and sub-goals were rewritten and returned to the Department of Education staff for further development. The final draft of the goals and sub-goals was adopted by the Board of Education on July 6, 1972.

Of the four major goals adopted by the Board the first goal relates directly to learner skills and knowledge. It states:

> The Kansas Educational Programs shall provide for all people in Kansas continuous and successful acquisition of skills, knowledge, and attitudes which are appropriate and conducive to individual personal growth and development necessary for a productive and satisfying life in a changing society.

Listed under this goal are sub-goals which relate to a variety of academic and non-academic skills areas including:

Arts and Humanities
Basic Skills: Communication
Basic Skills: Mathematics
Career Preparation
Consumer Preparation
Continuing Education
Environmental Education
Health
Nutrition
Preparation for a Changing Society
Safety
Self-Image
Science
Values and Citizenship

Thirteen out of the above mentioned 14 areas were measured in the Kansas Learner Needs Assessment Study. Continuing Education, considered beyond the scope of elementary and secondary education was not included in this study.

In addition to measuring student outcomes the Kansas Learner Needs Assessment Study was also designed to provide indicators on specific strengths and weaknesses within each of the basic skills and life skills areas. Measures of student attitude and functional ability, where appropriate, were also carried out.

Summary of Key Characteristics of the Kansas Learner Needs Assessment Project

The Kansas Statewide Assessment Study Provides:

1. Statewide information on how Kansas' students perform in specific basic achievement areas.

2. Statewide information on the standing of Kansas students in terms of other largely non-cognitive areas in education including life skills and self-image.

3. Comparative information on Kansas performance levels with that of the national performance levels.

4. Indicators of specific strengths and weaknesses within basic achievement areas.

5. Information useful to educators in planning educational program.

The design of the Statewide Assessment does not:

1) Allow for comparisons of individual school districts;

2) Provide a teacher evaluation;

3) Provide information on demographic and educational process variables;

4) Provide information about the causes of educational performance;

5) Specify a priori criterion levels for student outcomes.

These latter objectives are beyond the scope and purposes of this Assessment Study.

II. THE KANSAS LEARNER NEEDS ASSESSMENT DESIGN

Chapter II

The Kansas Learner Needs Assessment Design

The Goal Related Nature of the Kansas Learner Needs Assessment Study

The educational performance levels examined in the Kansas Learner Needs Assessment Study were largely determined by the set of State-Wide Goals for Education in Kansas, formalized in 1972. The determination of whether or not a goal is being met is largely a subjective process. The decision depends on judgments of what performance is adequate in the area, and the degree of priority one places on the objective.

There are many approaches and strategies for carrying out assessment. Some assessment programs measure goal attainment through the use of norm-referenced standardized tests. The use of such tests provides educators with information about comparative levels of student achievement. Others focus on measuring goal attainment based on learner objectives for which a criterion level of performance has been determined. Objective-based measurement provides educators with information about specific achievement strengths and weaknesses. Such information, because it is narrow in scope, is useful in making program or emphasis changes in curriculum.

The goal-based assessment of this study, while attending to what has been measured traditionally, is unique in that it goes beyond traditional educational curriculum to measure social, personal, and physical aspects of educational endeavor. The decision to measure education outcomes suggested by the Kansas State goals required the development of a needs assessment design that would be broad in application, narrow in scope, and at the same time yield a variety of information on each area that would be useful for future planning. The magnitude of this effort reflected two assumptions:

1) that an assessment program should, and could measure student performance in a wide range of traditional and nontraditional areas reflecting the kinds of skills, knowledge, and attitudes which the educational system works to foster; and 2) measurement instruments, with valid psychometric properties could be identified or developed to accomplish the range of testing directed by the statewide goals.

These assumptions were tempered with two realistic considerations: 1) that measurement related to broad goals could not be all inclusive; 2) that because of the unique nature of the areas to be measured the type of data yielded from area to area might not be consistent in form.

In order to minimize the limitations associated with broad-based assessment, the planning committee selected a needs assessment model that contained aspects of both the norm-referenced test and objective referenced models. The model selected was a post-hoc needs assessment model. This model was selected because of its proven ability to establish more realistic criteria upon which student performance judgments can be made. Unlike the a priori model, performance criteria are not set in advance of gathering data, rather data about actual student performances are gathered first. In this way district and state-wide educators can make individual decisions and set their own priorities on the learner objectives and student outcomes.

The Research Characteristics of the Kansas Approach to Statewide Assessment

During the planning phase of this study a thorough review of the related literature was carried out to determine relevant approaches, existing measures and salient key characteristics of needs assessment. A survey of the other states revealed that with few exceptions, assessment programs centered around the measurement of the basic skills areas, thus lending evidence to the unique nature of the Kansas Program.

The same review also revealed that many states were engaged in the assessment of key factors which influence student performance. These include demographic and school characteristics, such as location, size, age and design, educational process measures and other classroom descriptions such as teacher emphasis on reinforcement of self-concept, degree of student classroom participation, and class size, teacher and principal characteristics, such as educational background and experience; and student characteristics such as attendance, history, socio-economic status and sex. An assessment of these factors was not intended as part of this project, as a similar study was undertaken by Project SEEK.

Central to this research effort was the use of the ERIC information storage and retrieval system. Through the ERIC system a wide variety of information was gathered on appropriate student learning objectives within the thirteen content areas, as well as existing measurement devices. The Kansas Statewide Learner Needs Assessment Study also made use of the studies of other states that have been involved with educational effectiveness of their systems. Important implications and recommendations from these studies were used in the development of this project.

The Development of Student Learner Objectives

The post-hoc needs assessment model is an objective-referenced model designed to examine student performance along a narrow framework of educational competencies. To do this the Kansas Goals had to be given specificity by developing learner objectives for each of the thirteen areas under examination.

Objective pools were developed for each of the goal related areas. These were assembled from a number of sources including curriculum specialists, classroom teachers, State Department of Education personnel, as well as project

staff and the appropriate educational research. Once the objective pools were developed they were screened by the same groups of educators for their relevance to and coverage of the particular area.

Extensive effort was made to insure that each area was structured so as to make it adaptable to the post-hoc model. This was affected in all but two cases. Objectives relating to the area of self-image were not developed because of the undefined nature of this goal and the lack of experience in measuring self-image within the educational context. Within the area of reading achievement no objectives were developed for vocabulary and spelling. It is largely thought that vocabulary is a function of exposure, environment and experience which vary from individual to individual and from region to region, thus making it difficult to assign specific objectives to what individuals collectively should know. These areas were measured, however, through the use of standardized tests.

Identification and Development of Test Instruments

In determining the appropriate measure to use, two criteria were established:

1) That the test instrument measure the performance outcomes reflected by the learner objectives; and 2), that the instruments selected for use in both the sixth grade and twelfth grade studies approximate one another in form and content.

Twenty-two existing, published standardized test instruments were selected for use in this study. These were the Iowa Test of Basic Skills for grade-6, and the Gates MacGinitie Reading test for grade-12. In the mathematics area of Basic Skills, the Iowa Test of Basic Skills was again selected for use by grade 6 while the California Achievement Test was selected for grade 12.

In the Social Science area, American history,--the Hollingsworth-Sanders Intermediate History Test was selected for grade 6, and the Emporia American History Test was selected for grade 12. In the Science area, the Emporia General Science Test was chosen for grade 12 measurement.

In the Life Sciences Area the following tests were selected:

Physical Education, grades 6 and 12, the AAHPER Cooperative Physical Education Tests, forms 4A and 2A respectively;

Health and Safety, grade 6, the AAHPER Cooperative Health Test;

Career Education, grades 6 and 12, The Career Education Needs Assessment Olympus Publishing Co.;

Ecology, grades 6 and 12, the New Mexico Concepts of Ecology Test; levels 1 and 2 respectively.

Consumer Education, grade 12 only--the Test of Consumer Competencies Form A.

In the arts area the Colwell Music Achievement Test was selected for use by both grade 6 and 12.

The Tennessee Self Concept Test was selected as the measure for the self-image area for both grades 6 and 12.

A number of tests were specifically constructed for use in this study. This was carried out in cases where already existing measures were considered to be not adequate reflections of the learner objectives. Eleven tests were developed. These included Science Evaluation, grade 6; Safety Evaluation, grade-6, Health and Safety Evaluation, grade 12; Values and Citzenship Evaluation, grade-6 only; Nutrition Evaluation, grades 6 and 12; Visual Arts Evaluation grades 6 and 12.

In the case of mathematics, a mathematics evaluation test was constructed for both grades 6 and 12 in order to provide a second measure of student out-

comes. Within the reading area three tests were developed. At both the sixth- and twelfth-grade levels the Estes Reading Attitude Scale was constructed to measure the students attitude toward reading. At the twelfth-grade level the Everyday Living Reading Test was developed to measure the students functional reading ability. A second test, The Writing Mechanics Test, was developed to measure punctuation, usage, capitalization and spelling skills. Both these tests reflect measurement area contained in the Iowa Test of Basic Skills.

The list of the test instruments used in the Kansas Learner Needs Assessment Project is provided in Exhibit I on page II-8.

Selection of the Sample

Grade 6 and grade 12 were selected to participate in the Kansas Learner Needs Assessment Study. These grades were selected because they represent the terminal point of elementary and secondary education.

The basic sampling procedure that was used was a Stratified Cluster sample. As pointed out by Kish (1965, p. 164), cluster samples are generally selected with stratification because there are more advantages than in simple random sampling. First, stratification is usually easier because sorting involves fewer units and because more information is available for the sorts; the relative gains are greater for stratification, and there are fewer problems of selecting clusters without replacement. Thus, the sampling procedure used was a multi-stage stratified cluster sampling procedure.

The first stage in the multi-stage selection process was to select geographical areas of the state so that the entire state would be represented in the sample. The second stage was to select school districts on the basis of the size of the district so that all sizes of districts would be represented. The third stage was to select class units to be included in our sample. At

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Leslie Kish. SURVEY SAMPLING, John Wiley & Sons, Inc., New York, 1965.

each stage, random sampling procedures were used using an "Epsem" (equal probability of selection method) sampling procedure. All members of the classes that were finally selected were used in our sample.

The sample included students from 33 districts across the state who participated in the 1975, 1976, 1977, and 1978 testing program. Several times during the course of this study a district dropped out. Where this occurred, an alternate district reflective of the population dropping out, was added to the sample. In all, 3,200 sixth- and 2,600 twelfth- grade students participated in the Kansas Learner Needs Assessment Study.

EXHIBIT I

Basic Skills Area

Reading: grade 6 - Iowa Test of Basic Skills, Level 9, Form 6; Estes Reading Attitude Scale; A Look At Literature; grade 12 - Gates-MacGinitie Reading Test, Survey F; Everyday Living Reading Test; Estes Reading Attitude Scale; Writing Mechanics; Hoskers-Sanders Literature Test.

Mathematics: grade 6 - Mathematics Evaluation, Level 6; Iowa Test of Basic Skills, Level 9 Form 6; grade 12 - Mathematics Evaluation, Level 12; California Achievement Test, Level 5 Form A.

Social Science Area

Science: grade 6 - Science Evaluation, grade 12 - Emporia General Science Test.

American History: grade 6 - Hollingsworth-Sanders Intermediate History Test, grade 12 - Emporia American History Test.

Life Sciences Area

Physical Education: grade 6 - AAHPER Cooperative Physical Education test, Form 4A; grade 12 - AAHPER Cooperative Physical Education Test, Form 2A.

Health and Safety: grade 6 - AAHPER Cooperative Health Test, Preliminary Form 4; Safety Evaluation, Level 6; grade 12 - Health and Safety Evaluation, Level 12.

Values and Citizenship: grade 6 only - Values and Citizenship Evaluation.

Nutrition: grade 6 - Nutrition Evaluation, Level 6; grade 12 - Nutrition Evaluation, Level 12.

Career Education: grade 6 - Career Education Needs Assessment, grade 6; Career Education Needs Assessment, grade 12.

Consumer Education: grade 12 only - Test of Consumer Competencies, Form A.

Ecology: grade 6 - N.M. Concepts of Ecology Test, Level 1; grade 12 - N.M. Concepts of Ecology Test, Level 2.

Arts Area

Music: grades 6 and 12, The Colwell Music Achievement Tests.

Visual Arts: grades 6 and 12, Visual Arts Evaluation.

Self-Image Area: grades 6 and 12 - Tennessee Self Concept Test.

The Administration of Test Instruments

Pilot Testing

To facilitate the administration of a multiple-year assessment project, a pilot testing program was conducted each year. During each pilot testing, each of the tests selected for use was administered to one-sixth and one-twelfth grade class. These classes were representative of the sample population to be used in the overall study. The purpose of the pilot testing was to uncover problem areas related to test scheduling, test administration, confusion over directions, student understanding of tests and test items. Feedback from teachers and students was provided to project staff who then analyzed the problem areas and made the appropriate refinement called for.

Testing Cycles

The complete battery of 33 tests was administered in four cycles beginning in 1975. A cyclical testing program was called for because of the time factor involved in selecting, developing, scheduling, administering, retrieving, and analyzing tests and test data as extensive as that called for by the Kansas Learner Needs Assessment Study. Secondly, the specific goal relating to needs assessment called for a "continuous needs assessment process."

Mathematics and Science evaluation tests were administered in 1975. All of the Social and part of the Life Sciences, as well as the Arts areas, were administered in 1976. The Basic Skills Reading Tests were administered in both 1977 and 1978. Mathematics testing was repeated in 1978. The Self-Image area and remainder of the Life Science tests were administered in 1978. The multiple-year testing in the areas of mathematics and reading reflected the statewide, as well as national concern, with student performance in the basic skills areas. The complete listing of tests and test administrations can be found in exhibit II on page II-10.

EXHIBIT II

Testing Cycles

1975

Math Evaluation

Science Evaluation

1976

Values and Citizenship Evaluation, grade 6 only

American History

Physical Education

Health and Safety Evaluation

Nutrition Evaluation

Literature Evaluation

Career Education Evaluation

Visual Arts Evaluation

Music Evaluation

1977

Iowa Test of Basic Skills, Reading, grade 6

Gates-MacGinitie Reading Test, grade 12

Estes Reading Attitude Scale

Everyday Reading, grade 12

Writing Mechanics, grade 12

1978

Iowa Test of Basic Skills, Reading and Mathematics, grade 6

Gates-MacGinitie Reading Test, grade 12

California Achievement Test, Mathematics, grade 12

Test of Consumer Competencies, grade 12 only

New Mexico Concepts of Ecology Test

Tennessee Self Concept Test.

Distribution of Materials, Scheduling of Tests, and Collection of Test Booklets

The tests were administered in April of each year by classroom teachers or other school personnel designated as test administrators by the local district.

All test materials were mailed or delivered by common carriers to the participating schools in late March or early April of each year. Administrators were contacted to familiarize them with the objectives and purposes of the Kansas Learner Needs Assessment Study, and the procedures to be used in the test administrations. Local districts retained control over decisions relating to testing dates within a 2-3 week period and locations. However, they were instructed to simulate the conditions specified in the instruction packets.

Once the testing cycle was completed all answer sheets and test booklets were collected by the test administrator and checked to make sure that the complete set was intact. These were then delivered to project staff at the Kansas State Department of Education.

Data Processing

Once the test data was received by project staff, materials were sorted by grade and test and each answer sheet was scanned to check for response errors. The data was then delivered to the Department of Psychometrics at the University of Kansas where it was coded and prepared for processing on the University's computer.

To insure the accuracy of the results, data verification was done at several points in the data processing. Scoring keys were checked for accuracy before and after the answer sheets were machine scored. A random sample of answer sheets were then scored to verify the accuracy of the machine scoring. Finally, all computer printouts were optically scanned for any errors in printing and scoring.

Data Analysis

The analyses performed on each test included computing the mean, standard deviation, frequency distributions and level of difficulty for each item. The data from the standardized tests were then interpolated and percentile ranks and grade equivalent scores derived. These analyses provide comparative data on performance level of the Kansas population relative to that of the national norm groups for published tests.

A second analysis included an examination of the objectives tested. Each test item contained in the measurement instruments related to a learner objective that was derived from the state-wide goals. Each test item was referenced to its appropriate objective(s). The percent of students correctly responding to each item for an objective was computed to yield the average performance for each specific objective. Item analysis was performed on each item in the objective and the combined percent computed. These analyses provide statistical data on the students performance strengths and weakness.

Confidentiality in District Reporting

Throughout the project intermediate reports on the performance level of each school was provided to individual school districts. These reports included a detailed analysis of the results for each of the tested areas. Comparative data on the national norm groups, where available, were provided.

All districts participating in this Study were guaranteed complete confidentiality. All performance reports were sent directly to the superintendents. No records of those reports were maintained by the project staff or viewed by anyone other than Study staff.

State-wide Reporting

A preliminary technical report on the mathematics and reading achievement score for all tests was made available to the Commissioner of Education in

September. That report featured comparative analysis of the state's scoring with that of the norm referenced groups.

Organization of Results Chapters

The following four chapters present the results from each of the thirteen areas tested. The chapters are organized categorically and include:

Basic Skills:
- Mathematics
- Reading
- Literature

Science and Social Science:
- American History
- Science
- Values and Citizenship
- Consumer Education
- Ecology

Life Science:
- Physical Education
- Health and Safety
- Nutrition
- Career Education
- Tennessee Self-Concept Test

Arts:
- Visual Arts
- Music

Each chapter contains information on the sample size and administration of the tests, a description of the instruments used and its norm group where the test is standardized. The results for each test including means, percentile rank and grade equivalents, where they exist; are graphically provided along side comparative data for the national groups. In the case of reading where two testing cycles were completed, the Kansas data from both years is presented as well as the comparative national data. Each chapter also contains the list of objectives for each area and an analysis of those objectives.

In interpreting the results of this Study, it should be kept in mind that the tests used covered only those objectives delineated by the goals for the

State of Kansas. Local goals and objectives may not have been covered by the tests used in the needs assessment tests. Likewise, local emphases may differ from those that are measured by the tests. Thus, a particular school district may have placed more curricular emphasis on areas not covered by the tests.

The results of this study can not be used to compare student performance levels from district to district, or the performance of students within districts, since the results are presented for the total State only. The results found here can only be used to indicate the general effectiveness of the educational system within the State of Kansas.

In reviewing the following results it should be noted that "need" in this context is best understood as the discrepancy in student performance between their current level and the identified optimum level.

To determine this discrepancy three things must happen:

1) the current condition or status quo must be determined.

2) a standard goal or optimum condition must be identified.

3) the discrepancy between the current condition and optimum condition must be assessed and a determination made as the severity of the discrepancy. The discrepancy between the current condition and the optimum condition is termed the need.

In the case of the Kansas Learner Needs Assessment Study, thirteen (educational) areas were examined through the use of measurement devices to determine students' performance level (current condition). These measurements were carried out in light of goal-related objectives that were designed to meet the Educational Goals of Kansas. However, because of the research nature of this project no qualitative judgment was made regarding the nature and severity of revealed discrepancies or needs.

The establishment of quality criteria and the assignment of such criteria to performance outcomes was beyond the scope of this project. The evaluation of learner outcomes found here may become the subject of another study to be taken up by the Kansas State Department of Education.

III. BASIC SKILLS:

READING AND MATHEMATICS RESULTS

Chapter III

Results from the Basic Skills Area

Reading

The reading assessment program was carried out in April of 1977 and 1978. Approximately 2400 sixth- and 1800 twelfth-grade students from 33-participating districts were tested during this period against some 190 specific learning objectives determined to be the cognitive skills that students in those grades should have mastered.

The objectives were clustered into two generalized intellectual areas: achievement and functional ability. The organization of objectives into these two broad categories reflected two major interests of the assessment project: first, to study not only what students know, but also how well they use what they know in situations in which they may have occasion to use their reading skills.

A third focus of the reading assessment project centered around interest in reading. Because the measurement of interest or reading attitude is fairly subjective, no objectives were developed to coincide with reading attitude.

Test Selection

A thorough survey of currently available tests was carried out. After considering content, psychometric features such as validity and reliability, testing time and cost, the Iowa Tests of Basic Skills was identified as the most appropriate measurement of the grade 6 learning objective. The construction of the test itself coincided with two of the three learning areas--achievement and functional ability.

At the twelfth-grade level the Gates MacGinitie Reading Test was selected as a sound measure of student achievement in reading comprehension and speed and accuracy. The test however did not coincide with the ITBS measurement of

English grammar. To compensate for this a corresponding test under the heading of Writing Mechanics was constructed for use at the twelfth-grade level. A second test, The Everyday Living Reading Test, measuring functional ability was also developed for use at that level.

To measure reading attitude the Estes Reading Attitude Scale was developed for use at both levels.

Description of Tests

Iowa Tests of Basic Skills, Form 6 Level 12 (grade 6)

The skills measured by the IBTS Reading are classified into four major areas: vocabulary, reading, language, and work-study. A single comprehensive test is provided in each of the first two areas. Separate subtests are provided for each of four aspects of language development: spelling, capitalization, punctuation, and usage. Three subtests in the work-study area are concerned with map reading, reading graphs and tables, and knowledge and use of references.

Level 12, the level designated for grade 6, contains a total of 411 reading test items. The number of items organized into each subtest area are as follows: vocabulary 46; spelling, 46; capitalization, 42; punctuation, 42; usage, 32; map reading, 40; graphs and tables, 28; reference materials, 59. Test items are numbered sequentially across levels for subtests meaning that for all levels above one, the numbering system does not begin with number 1. (The vocabulary subtest has 46 items. Those items are numbered, at level 12, from 40-85.)

The IBTS differs from most other elementary achievement test batteries in that they are concerned only with generalized intellectual skills and abilities and do not provide separate measures of achievement in the content subjects, such as the social studies, literature, general science, and descriptive geography. In addition, special effort has been made throughout the entire battery

to place as much emphasis as possible upon functional values of what has been taught. The pupil's ability to use the skills acquired is tested in situations approximating, as closely as is possible in a pencil and paper test, the actual situations in which he or she may have occasion to use these skills.

Gates-MacGinitie Reading Tests, Survey F

The Survey F level of the Gates-MacGinitie Reading Tests is part of a series of tests covering grades K through 12. Survey F is intended for use in grades 10 through 12. Two equivalent Forms of Survey F are available, differing only in scoring methods. Each consists of three parts: Speed and Accuracy, Vocabulary, and Comprehension.

The Speed and Accuracy Test provides an objective measure of how rapidly students can read with understanding. This test contains 36 short paragraphs of relatively uniform difficulty. Each paragraph ends in a question or incomplete statement, and a choice of four words follows. The student's task is to choose the word that, according to the paragraph, best answers the question or completes the statement. The number of paragraphs he or she completes in the four minutes allowed provides a measure of how rapidly the student reads. The time limit for this test has been made short enough that few students will be able to finish all of the items.

The Vocabulary Test samples the student's reading vocabulary. This test contains 50 items. Each item has a test word followed by five other words, one of which is similar in meaning to the test word. The student's task is to choose the word that means most nearly the same as the test word. The first items are composed of relatively easy and commonly used words and the words gradually become less common and more difficult.

The Comprehension Test measures the student's ability to read complete prose passages with understanding. It contains 20 passages in which a total of

52 blank-spaces have been placed. For each blank space a choice of five completions that best conforms to the meaning of the whole passage is provided. Again, the first passages are relatively simple and the later ones become progressively more difficult.

Reading: Everyday Living. This is a 75-item test developed for use in this study, using a multiple-choice format. Throughout the test booklet, 15 functional reading examples are given such as personal letters, mileage maps, and dictionary pages, and are followed by a series of questions relating to the reading example. These questions test the student's understanding of the example, ability to complete the example, or ability to obtain information from the example.

Estes Attitudes Toward Reading. A locally-developed test, this scale is composed of 20 items, each in sentence form. Each item makes a statement about reading such as "Money spent on books is well spent," or "Reading is dull." The student then answers according to a Likert scale format with answers ranging from "strongly agree" to "strongly disagree". The scale is designed to measure a student's interest in non-school related reading activities.

Writing: Mechanics. This locally-developed test contains a total of 138 items, arranged in four sections. These sections consist of: Spelling, Capitalization, Punctuation, and Language Usage. Each of these are constructed differently due to the varied content. In the Spelling section, each item lists five words, one of which is incorrectly spelled. The student is instructed to find and mark the incorrectly spelled word. In the Capitalization section three paragraphs are presented, and divided into items, each containing one capitalization error. The student is asked to find and mark the error in each item. The Punctuation items each present a sentence without punctuation followed by multiple choices of various punctuation marks. The student is instructed to choose the correct punctuation mark for each item. The English

Usage items each present an incomplete sentence with a choice of words to complete the sentence. The student must choose the answer which forms the best English sentence.

A Look at Literature-Grade 6

There are two forms of this test, Form A and B. Each form contains 50 multiple choice questions arranged in two parts of 25 questions each. The questions are based on fourteen short literary passages which include prose and poetry and represent a variety of literary types.

To emphasize that literature can be listened to as well as read, Part I of the test is read orally by the teacher while the students follow the text; Part II is read silently by the students. The oral presentation of Part I also increased the validity of the test for groups of students who may have difficulty reading such material independently.

Both Parts of the test are untimed; most classes may be expected to complete the test in 60 to 70 minutes. The two parts may be administered separately if desired.

In responding to a question the student selects what he considers to be the best answer from among the four alternatives provided. Answers may be recorded directly in the test books or on a machine scorable answer sheet.

Hoskins-Sanders Literature Test-Grade 12

This test consists of four equivalent forms, each of which contains questions on 35 classical selections. The selections included in the test are the ones which were reported most frequently by a large number of high school English teachers as being studied in their classes. The purpose of the test is to measure understanding and knowledge of literature.

The items which comprise the present forms of the test have undergone numerous revisions. The revisions were based on statistical studies of test results and the criticism of teachers of literature and of test construction specialists.

Results

The results are reported in three forms. For the Iowa test of Basic Skills, Kansas means, percentile rank and grade equivalents are presented for each subtest in the form of histograms. These histograms also contain a comparison of the performance of grade 6 with that of the national norm group. Following the histograms is the list of the objectives or skills areas measured by the subtest along with the item analysis or percent-of-correct responses for the Kansas samples.

The same information is presented for the Gates-MacGinitie Test with one exception. National and state grade equivalent scores were not available.

No item analysis is available for vocabulary subtests as objectives were not developed. The results of these subtests is presented in histogram form only.

The specially constructed tests have no norm groups results by which comparative performance can be measured. The results of these tests are presented in mean and standard deviation scores as well as item analysis of the objectives.

The Estes Reading Attitude Scale has been redrawn and is presented here in its entirety with the percentage of responses for each item by category listed. The information is presented for the total sample at each grade as well as separate analysis for the male and female samples.

The results for the literature tests for both grades 6 and 12 have been included in this section. That information is presented in similar form to that for the ITBS.

Summary sheets containing all the information presented in the histograms can be found at the end of this section.

Subscore Results for the Iowa Test of Basic Skills - Grade 6

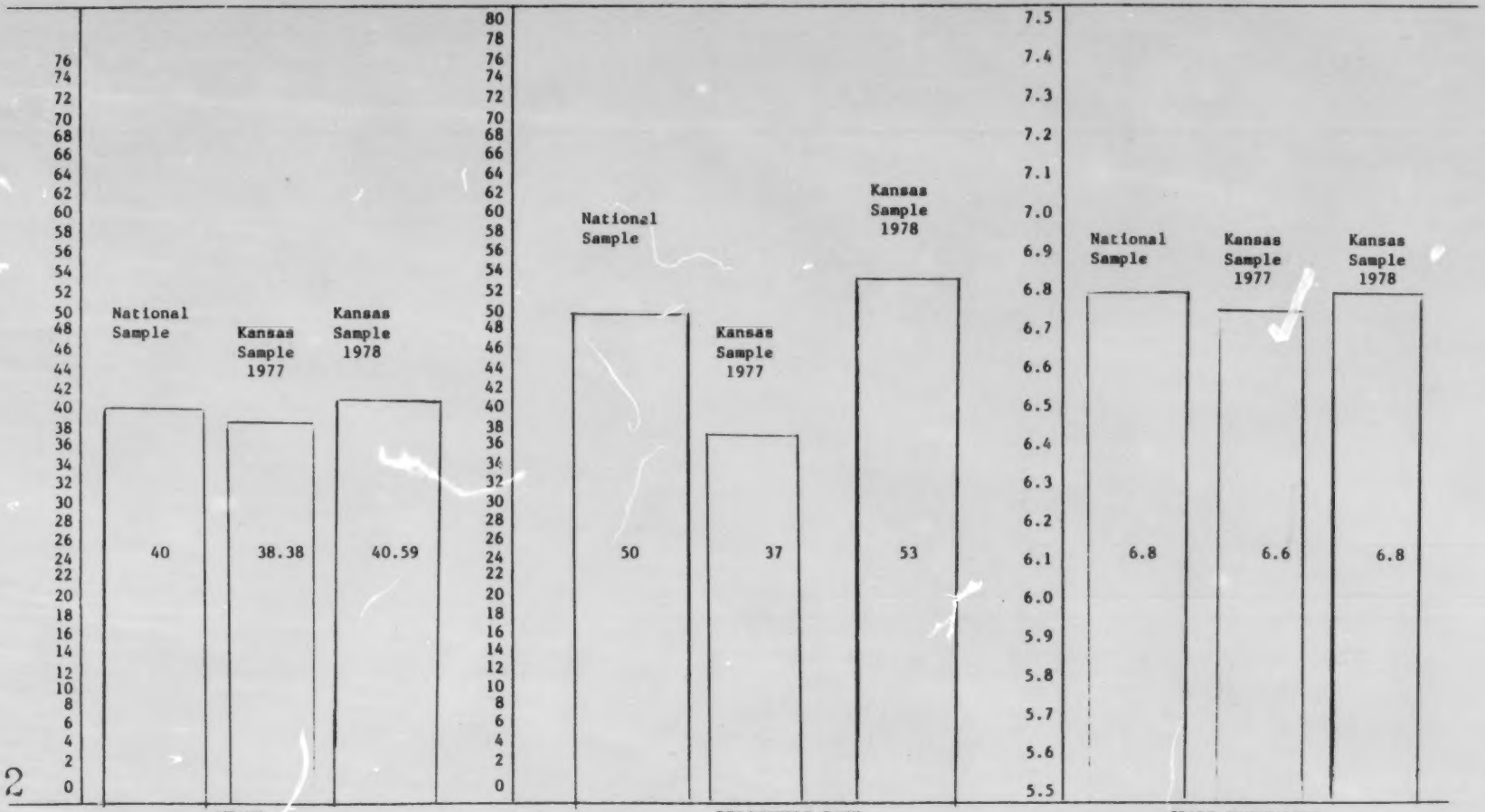
Reading Comprehension

Exhibit 3 presents the results of the reading comprehension subtest. In the first sample year 1977, Kansas students scored 1.62 points below the national norm group. The national scoring on this subtest was so close that that difference placed Kansas at the 37th percentile. In 1978 the Kansas Sample scored slightly higher than the national sample, only .59 points higher. This difference placed the 1978 sample at the 53rd percentile.

This performance is reflected in the item analysis. The 1978 sample scored consistently higher on the objectives than did the 1977 sample. The 1977 sample answered 50 percent of the questions right on only four objectives, where the 1978 sample answered 50 percent correct on all but three objectives. Both sample groups showed two consistantly weak areas: detection of the main purposes of a paragraph or selection, and recognition of a mood or tone of a selection.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 3



GRADE 6 TEST Comparative Data for Iowa Test of Basic Skills SUBTEST Comprehension

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Reading Comprehension

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
62,64,65, 66,71,74, 80,82,84, 85,103, 107,110, 111,112, 113,115, 117,124, 129	The student will be able to recognize and understand important facts and details.	48	52
63,67,72, 73,76,81, 83,86,87, 88,93,100, 105,106, 119,121, 122,123, 125,126, 127	The student will be able to recognize and understand implied facts and relationships.	51	54
70,94,95, 102,104, 109,118, 133,134, 135	The student will be able to deduce the meaning of words or phrases from context.	44	47
120	The student will be able to detect the main purpose of a paragraph or selection.	35	35
61,69,77, 78,90,92, 99,114, 116,128, 130,132	The student will be able to recognize the main idea or topic of a paragraph or selection.	58	59

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Reading Comprehension (cont'd.)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
79,108	The student will be able to recognize common elements or parallel topics in incidents or paragraphs.	48	52
101	The student will be able to recognize proper time sequence.	57	58
68,75,89, 131,136	The student will be able to develop generalizations from a selection.	56	58
91,96,98	The student will be able to recognize the writer's viewpoint, attitude, or intention.	49	54
97	The student will be able to recognize the mood or tone of a selection.	33	36

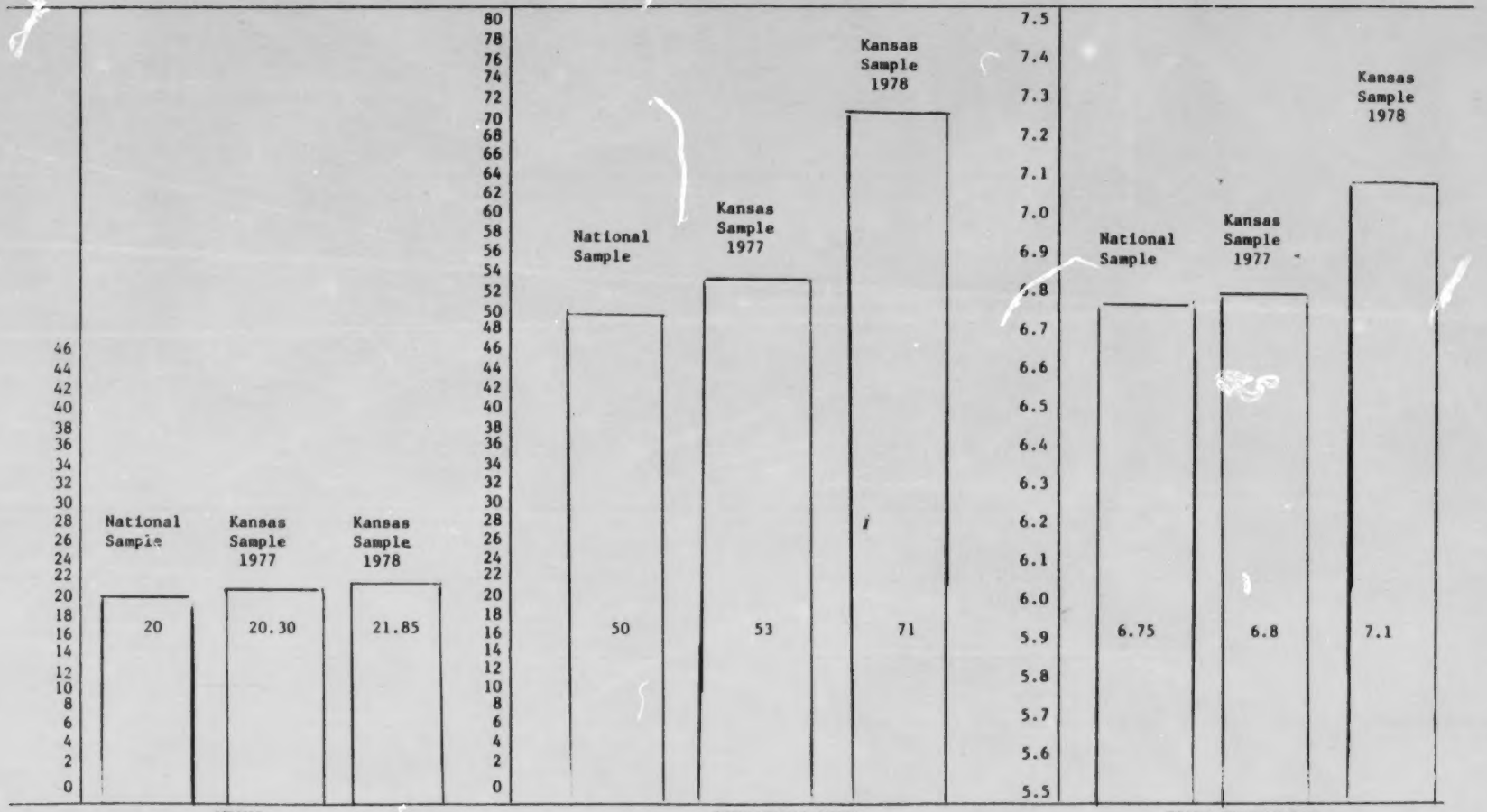
ITBS Spelling Subtest Results

Both the 1977 and 1978 Kansas sample groups outscored the national sample group in this subtest (exhibit 4). The difference was slight in 1977, only .30 points higher; and rather significant in 1978, 1.85 points higher. The significance of this point total can be seen in the percentile ranks. The 1978 sample scored at the 71st percentile.

The difference between the 1977 and 1978 Kansas Sample groups item analysis is not as obvious as the mean scores. The same type of performance consistency that was present in the previous subtest is clearly absent in this one. Of the 15 spelling skills areas tested, the 1978 sample outscored the 1977 sample in only six areas. The 1977 sample outscored the 1978 sample in seven areas. Both sample groups performed the same in two skills areas. The higher mean score for 1978 can be accounted for in that where they did score higher the difference was more appreciable than in the areas outscored by the 1977 sample. The 1977 sample demonstrated weakness in T, ed substitutions; X, XS, XC, CC substitutions; and omitted letters. They were strong in plural forms. The 1978 sample demonstrated weakness in double letters; interchanged letters; r, er, or substitutions; and X, XS, XC, and CC substitutions. They too were strong in plural letters.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 4



GRADE 6 TEST Comparative Data for Iowa Test of Basic Skills SUBTEST Spelling

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Spelling Subtest

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
	No specific objectives were developed for spelling for the State study. The spelling skills item classification used in the ITBS spelling subtest is based upon error type. Using this system the student is asked to look for and identify mistakes in spelling where they exist. The spelling subtest consists of the following error types:		
47,50,63 67,76	double letter.	41	36
43,60,66	final e, e before suffix.	55	54
52,62,74 80	interchanged letters.	44	34
46	c, ck, k substitutions.	51	58
70	l, el, le substitutions.	53	53
54,64,71	miscellaneous and multiple errors.	50	49
41	plural forms.	62	68
78	r, er, or substitutions.	47	33
45,55,73 83	s, sc, sh, c, ch, t, v substitutions.	50	42
61	t, ed substitutions.	26	49
40,44,48, 49,57,58, 65,68,75, 79,85	vowel substitutions.	50	50

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Spelling Subtest (cont'd)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
81	x, xs, xc, cc substitutions.	32	19
53	y, ey, i substitutions.	49	57
42,51,59, 69,77,84	no mistakes.	41	56
56,72,82	omitted letters.	38	41

53

54

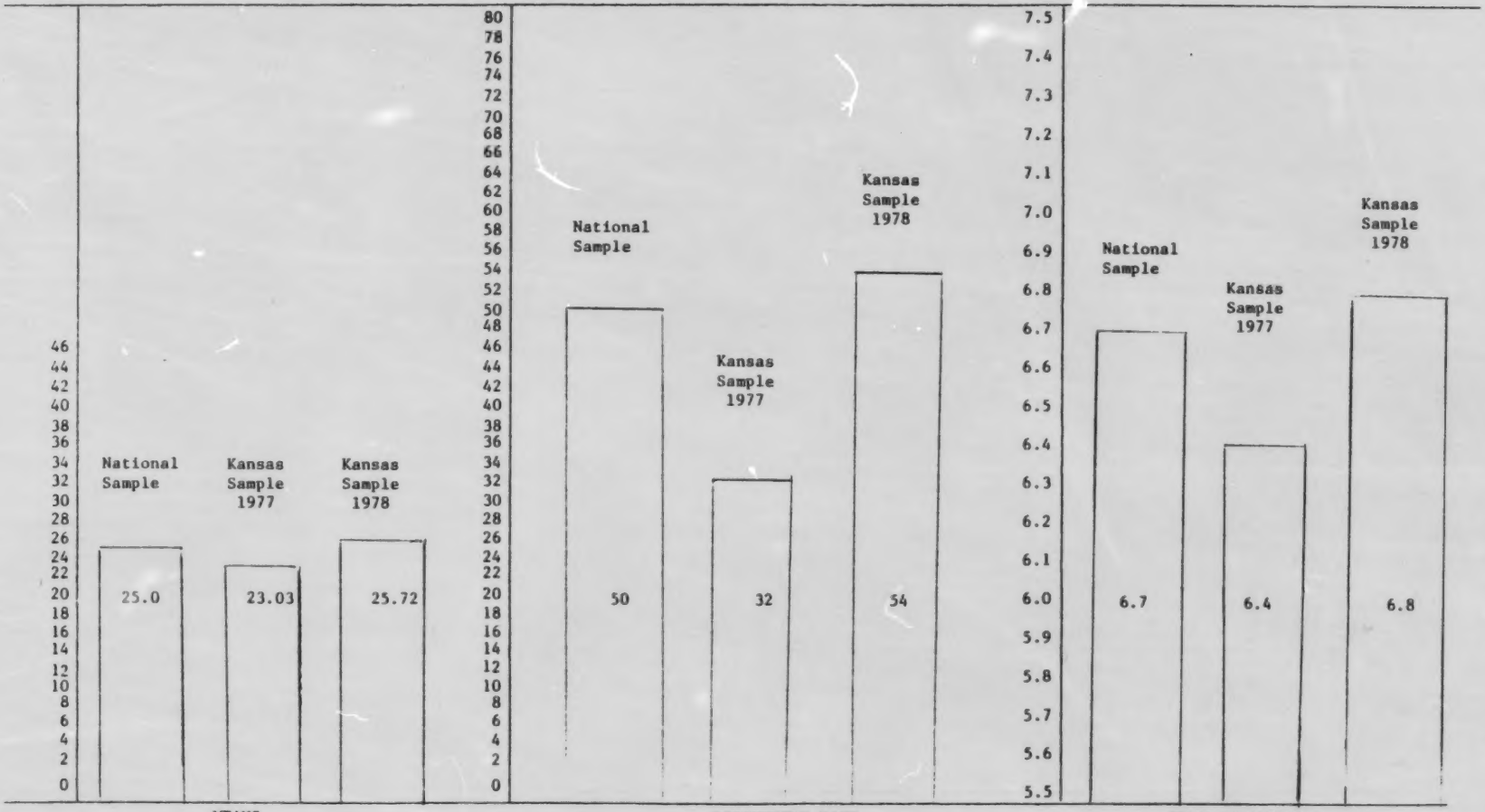
ITBS Vocabulary Subtest

As previously stated, no objectives were developed for vocabulary nor does the ITBS identify objectives or skill areas for vocabulary. The vocabulary words included on this subtest are those considered to be familiar to grade 6 students.

Exhibit 5 presents the means, percentile ranks, and grade equivalents for the 1977 and 1978 Kansas Samples and comparative norm sample data. The 1977 sample scored lower, 1.97 points lower, than the national sample; while the 1978 sample scored slightly higher than the national group. These differences are reflected in both the percentile rankings and grade equivalent scores. The 1977 sample scored at the 32nd percentile with a grade equivalent of 6.4, while the 1978 sample scored at the 54th percentile with a 6.8 grade equivalence.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 5



GRADE 6 TEST Comparative Data for Iowa Test of Basic Skills SUBTEST Vocabulary

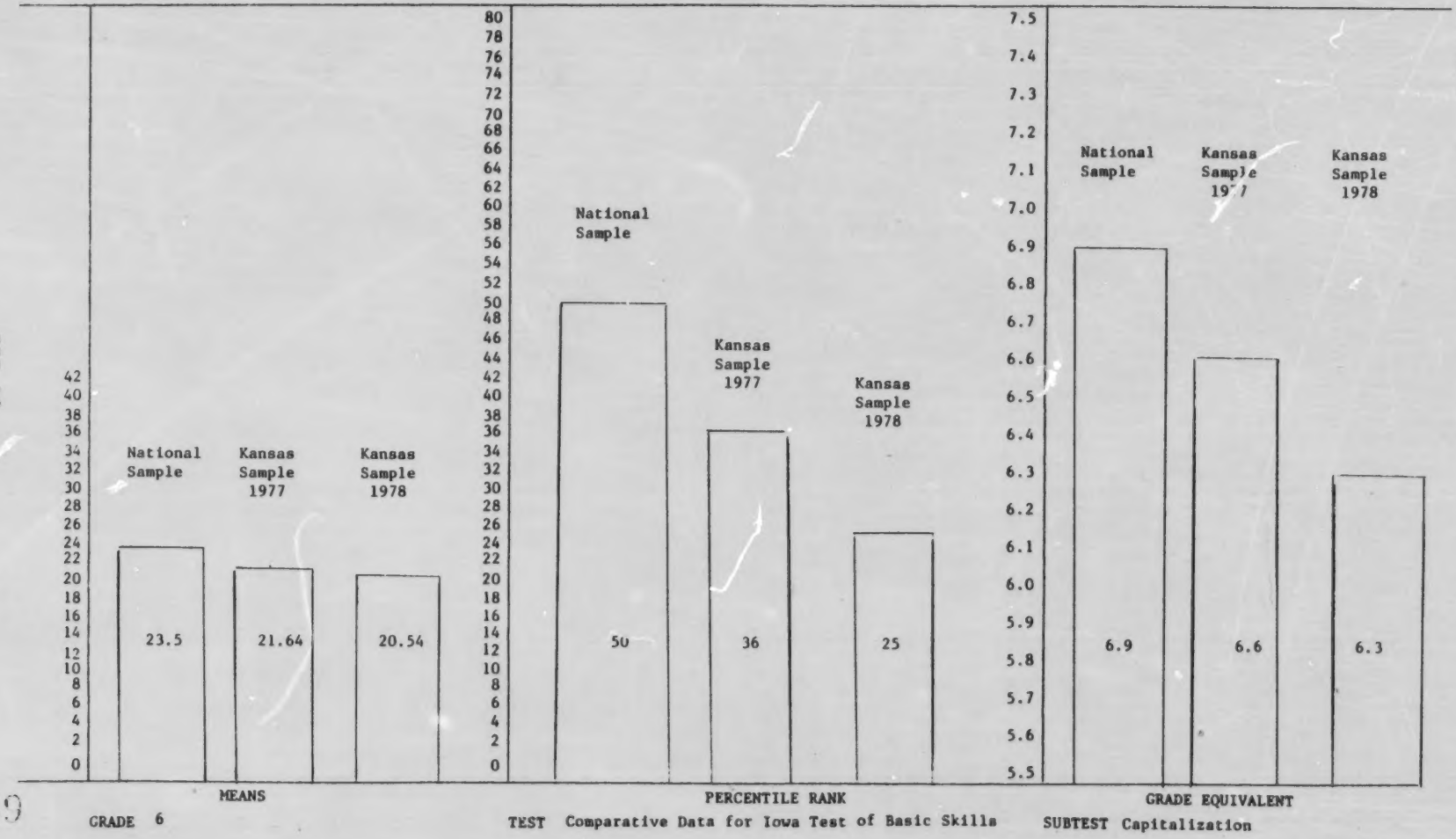
ITBS Capitalization Subtest

Exhibit 6 presents the results of the ITBS Capitalization Subtest. Both the 1977 and 1978 sample groups scored lower than the national group, with the 1977 sample scoring higher than the 1978 sample group.

The item analysis reveals that both sample groups closely approximated one another on the percent correct and performance on objectives. Both groups scored low on capitalizing: the first word in a quotation, nouns which designated definite geographic portions of the country, expressions used for the Deity and Bible, and over capitalization. Both sample groups scored very high on capitalizing: names of countries and continents; and names of persons or animals and initials of persons.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 6



GRADE 6 TEST Comparative Data for Iowa Test of Basic Skills SUBTEST Capitalization

III-18

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Capitalization

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
	The student will demonstrate a knowledge of the rules of capitalization by correctly using them for:		
59	names of persons or animals and initials of persons.	72	68
47,63	words indicating family relationship, when used specifically and without a possessive pronoun.	46	46
72	titles of respect, honor, or rank.	55	56
60	first word of a sentence.	50	45
70	first word in a quotation.	36	27
78	in writing letters; the first word and the word which stands in place of the person's name in the salutation.	56	51
68	days of the week.	46	45
42,55	names of holidays & religious days.	46	41
45	titles of books, music, magazines, etc.	67	64
53	names of cities and states.	61	58
39	names of countries and continents.	80	76
75	nouns which designate definite geographic portions of the country.	17	22
40,56,69 77	names of streets, avenues, etc.	55	53
43,58,64	names of rivers, oceans, canals, mountains, etc.	48	50
57,73	names of buildings, schools, parks, etc.	54	51

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Capitalization (cont'd.)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
44	names of racial, political or religious bodies.	47	54
46	proper adjectives.	62	57
50,65,67	names of specific organizations.	57	53
49	specific brand names.	44	47
74	all expressions used for the Diety and Bible.	35	36
	The student will recognize:		
48,52,54, 61,66,79, 80	over capitalization.	33	30
41,51,62, 71,76	"no mistakes".	70	69

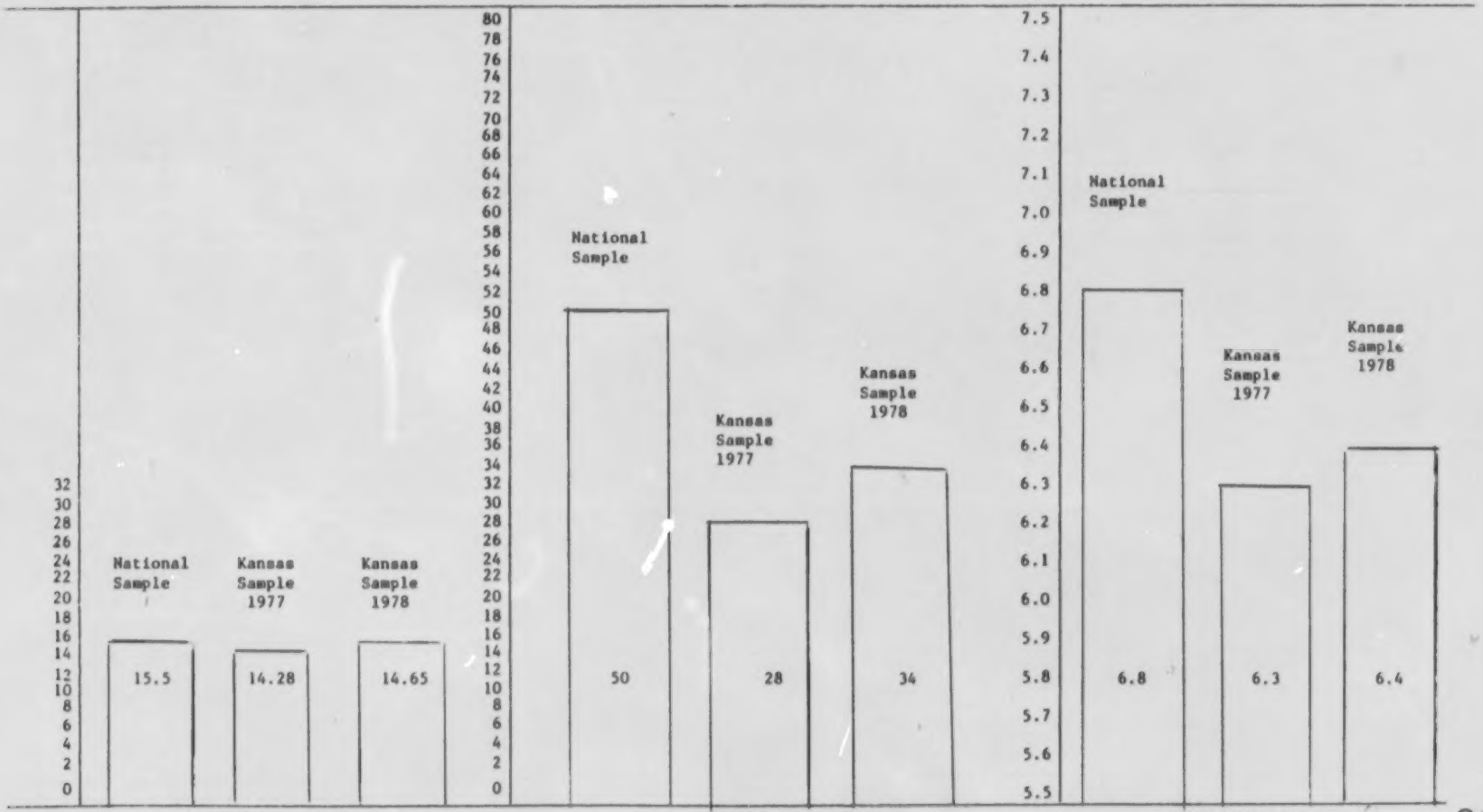
ITBS Usage Subtest Results

Exhibit 7 presents the results of grade 6 performance on the English usage subtest. Both Kansas samples scored below the national mean of 15.5, with the 1977 sample scoring below the 1978 sample. In 1977 the sample scored a mean of 14.28. This difference was substantial enough to place the 1977 sample in the 28th percentile. The 1978 sample scored somewhat better with a mean of 14.65 and a percentile ranking of 34.

A look at the item analysis shows that the 1978 sample performed better on all but one objective. Both sample groups demonstrated weakness with the use of verbs.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 7



GRADE 6 TEST Comparative Data for Iowa Test of Basic Skills SUBTEST Usage

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Usage

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
	The student will demonstrate an understanding of:		
33,38,49, 58	use of pronouns.	49	50
34,37,40, 43,44,47, 50,54,57, 59,60,63, 64	use of verbs.	35	38
42,51,53, 61	use of adjectives & adverbs.	43	46
35,48,55	avoidance of double negatives.	50	52
45	avoidance of redundancies.	44	46
39	miscellaneous word forms.	41	43
	The student will recognize:		
36,41,46, 52,56,62	"no mistakes".	56	55

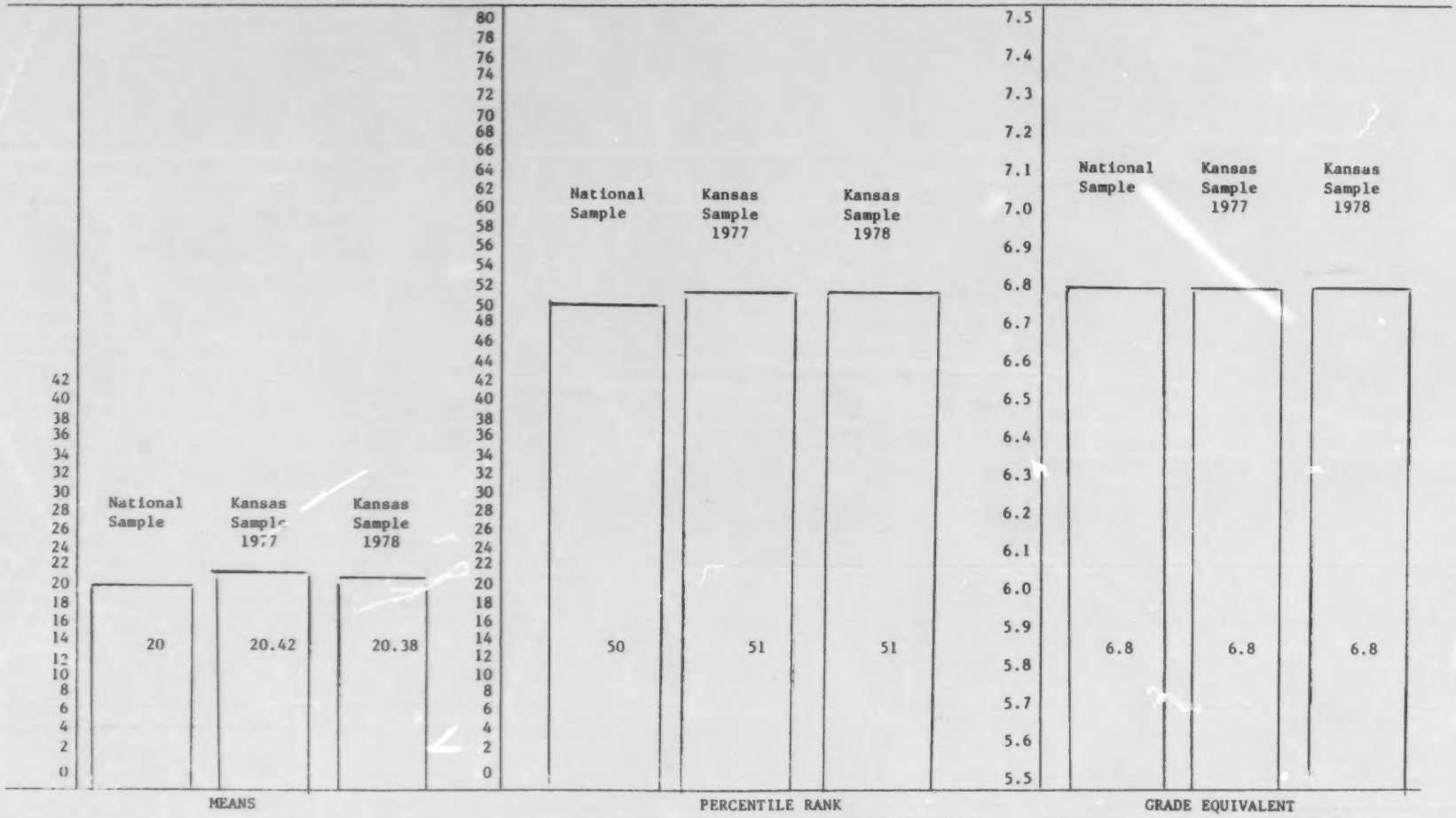
ITBS Punctuation Subtest Results

Both the 1977 and 1978 Kansas sample groups outscored the national norm group on the punctuation subtest, with the 1977 sample outscoring the 1978 sample slightly.

A look at the item analysis sheets shows that, in spite of their performance over the national sample, four areas of weakness are prevalent. Both sample groups show consistent weakness in the use of apostrophes, double quotation marks, colons and semi colons; and exclamation marks.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 8



GRADE 6 TEST Comparative Data for Iowa Test of Basic Skills SUBTEST Punctuation

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Punctuation

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
	The student will demonstrate an understanding of:		
44,50,59, 71	use of period.	52	51
39,55,64	use of question mark.	50	53
41,47,49, 53,56,58, 61,65,70, 74,77	use of comma.	51	52
48,54,66	use of apostrophe.	34	33
45,63,76, 80	use of double quotation marks.	35	34
69,72	use of colon & semicolon.	22	23
78	use of exclamation mark.	36	35
	The student will recognize:		
40,43,46, 52,57,62, 67,73,79	overpunctuation.	51	50
42,51,60, 68,75	"no mistakes".	61	63

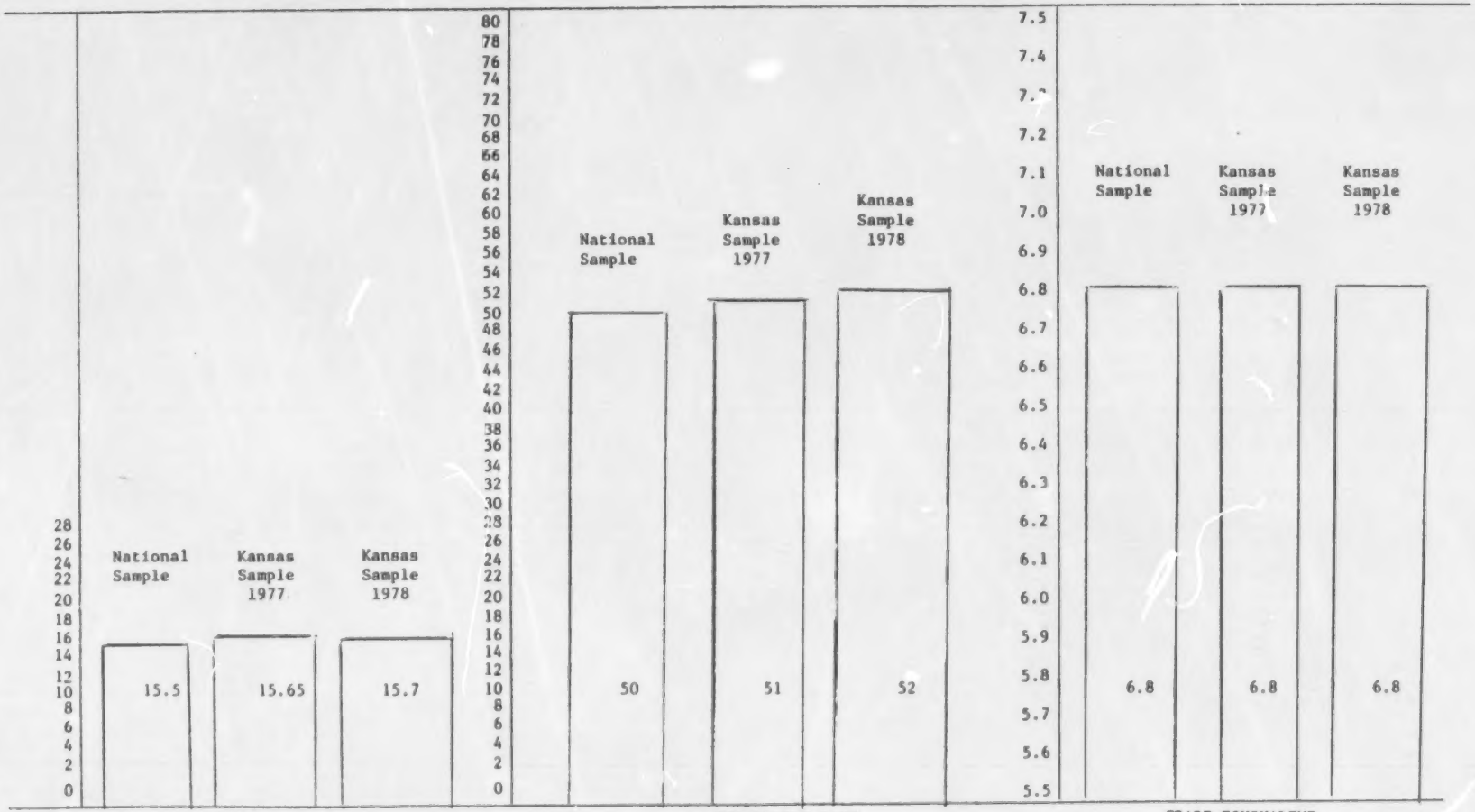
ITBS Reading Graphs and Tables Subtest Results

Exhibit 9 presents the results of the Reading Graphs and Tables Subtest. Both Kansas sample groups outscored the national norm group slightly, with the 1978 sample group doing .05 better than the 1977 sample.

The item analysis sheet shows that, in all but one instance, both sample groups scored better than 50 percent correct on the objectives.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 9



GRADE 6 TEST Comparative Data for Iowa Test of Basic Skills SUBTEST Graphs and Tables

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Reading Graphs and Tables

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
	The student will be able to:		
41,51,52	read amounts by using the scale (or scales) on bar, line, and picture graphs.	59	58
37,39,40, 50	read amounts by interpreting the sectors of a circle on circle graphs.	53	53
34,47,49, 59,60	compare 2 or more values read from a graph or table by determining rank.	56	56
45,46,54	compare 2 or more values read from a graph or table by determining differences between amounts.	56	57
38,48	compare 2 or more values read from a graph or table by determining how many times greater one amount is than another.	62	62
42,53	determine relative rates or trends.	55	56
33,35,36, 43,44,56, 57,58	determine underlying relationships through correct interpretation of a graph.	58	59
55	grasp the outstanding facts portrayed by a graph or table.	41	42

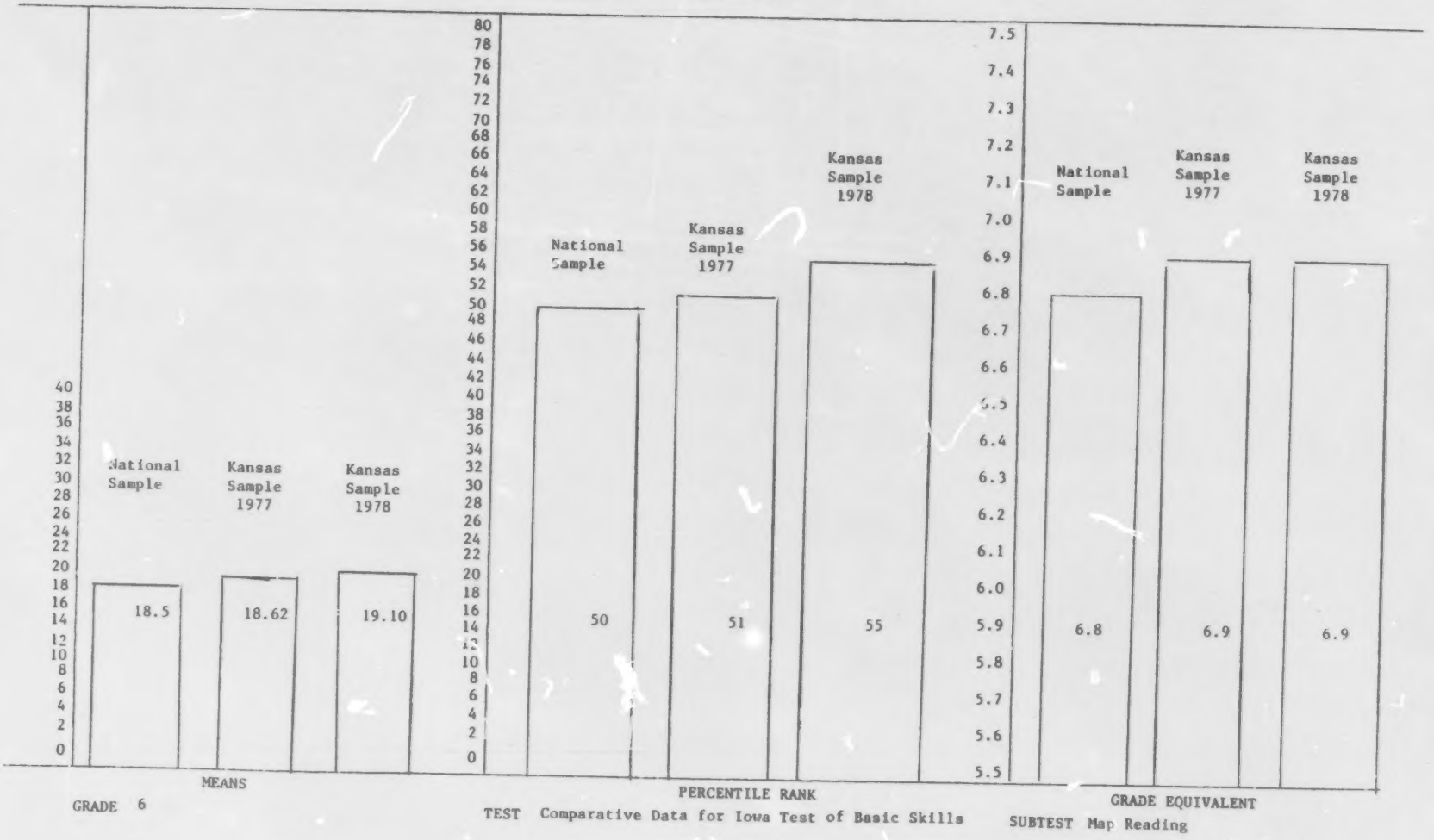
ITBS Map Reading Subtest Results

Both Kansas sample groups again outscored the national sample group on this subtest. The national group scored a mean of 18.5 while the 1977 and 1978 Kansas samples scored means of 18.62 and 19.10 respectively.

In spite of this showing, some recognizable weaknesses were demonstrated on their performance on the objectives. Both groups show a weakness in their ability to orient a map and determine direction and their ability to read and compare facts from one or more pattern maps.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 10



GRADE 6

TEST Comparative Data for Iowa Test of Basic Skills

SUBTEST Map Reading

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS Map Reading

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
	The student will demonstrate:		
51,52,58, 59	ability to orient map and determine direction.	37	33.25
38,41,45, 47,48,49, 57	ability to locate and/or describe places on maps and globes.	53	54.43
32,35,42, 44,46,61	ability to determine distances.	49	51.83
39,40,43	ability to determine or trace routes of travel.	65	59.00
28,36,50, 53,55,56	ability to understand seasonal variations, sun patterns and time differences.	49	46.33
62,65,66	ability to read and compare facts from one or more pattern maps.	33	28.33
29,34,64	ability to visualize landscape features.	51	52.67
30,31,33, 37,54,60, 63,67	ability to infer man's activities or way of living.	52	48.13

ITBS Reference Skills Subtest Results

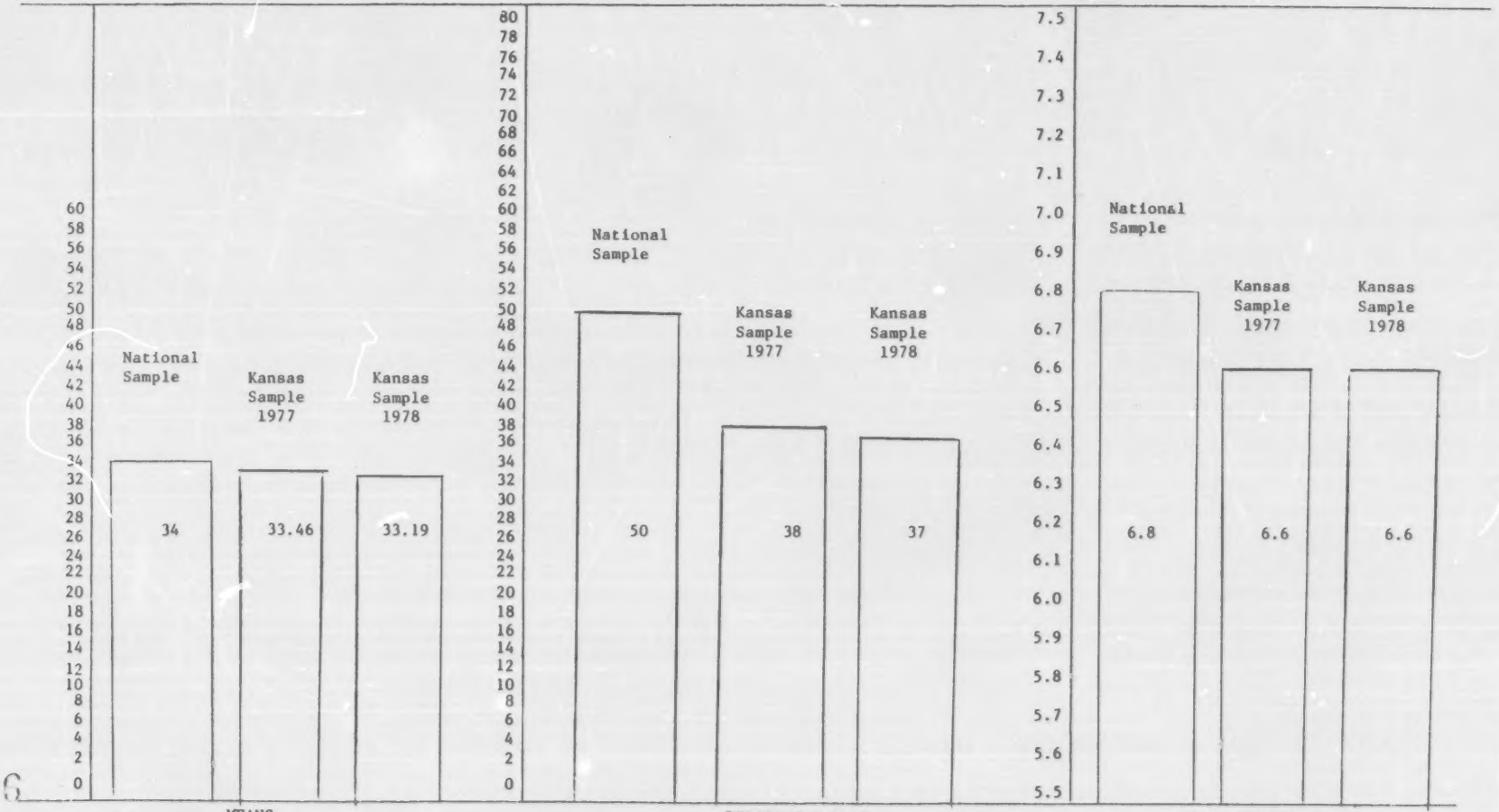
The results of this subtest show that both Kansas sample groups failed to perform at the level of the national sample group. Although the mean differences were slight--national mean, 34; 1977 Kansas mean 33.46; 1978 Kansas mean 33.19; the national scores were so very close that even these slight Kansas differences placed them at the 38th percentile for 1977 and 37th percentile for 1978.

A look at the Item Analysis sheets show that of the 18 objectives listed both sample groups demonstrated strong performance on nine of the objectives and poor performance on only two objectives.

This seeming incongruence can be explained in terms of the difficulty level of the test. A look at the total number of test items (60) and the mean scores shows that all groups scored well above the median (30), indicating that the test was not as difficult as some of the other subtests. (This also explains why the Kansas samples demonstrated weakness on subtests in which they outscored the national sample.) The level of difficulty is greater in tests where the sample group fails to answer 50 percent of the test items correct.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 11



GRADE 6 TEST Comparative Data for Iowa Test of Basic Skills SUBTEST Reference Skills

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS Reference Materials

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
	The student will be able to:		
67,68,69, 70,71,72, 73,74,75, 76,77,78, 79,80,81, 82	alphabetize	64	71
	use the dictionary		
51	a. spelling	77	76
59,55,52	b. pronunciation	51	53
54	c. syllabification	69	72
57	d. parts of speech	62	64
53,56,58, 60	e. meaning	61	62
61,62,63, 64,65,66	use an encyclopedia	62	61
93,94,95, 96,97	use dictionary guide words	47	45
83,84,85, 86,87,88, 89,90,91, 92	use an index	37	39
98,99,100, 101	use key words	36	33

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS Reference Materials (cont'd.)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
	use general reference materials:		
43	a. maps and globes	77	78
47	b. dictionary	81	81
49	c. atlases	62	62
48	d. encyclopedias	67	68
44	e. special references	67	63
45	f. current magazines	68	70
46	g. parts of a book	78	79
50	h. book selection	67	65

A Look at Literature - Grade 6

The inclusion of the literature component of the Kansas Learner Needs Assessment Study in this section is obvious: knowledge and understanding of literature is directly linked to reading comprehension.

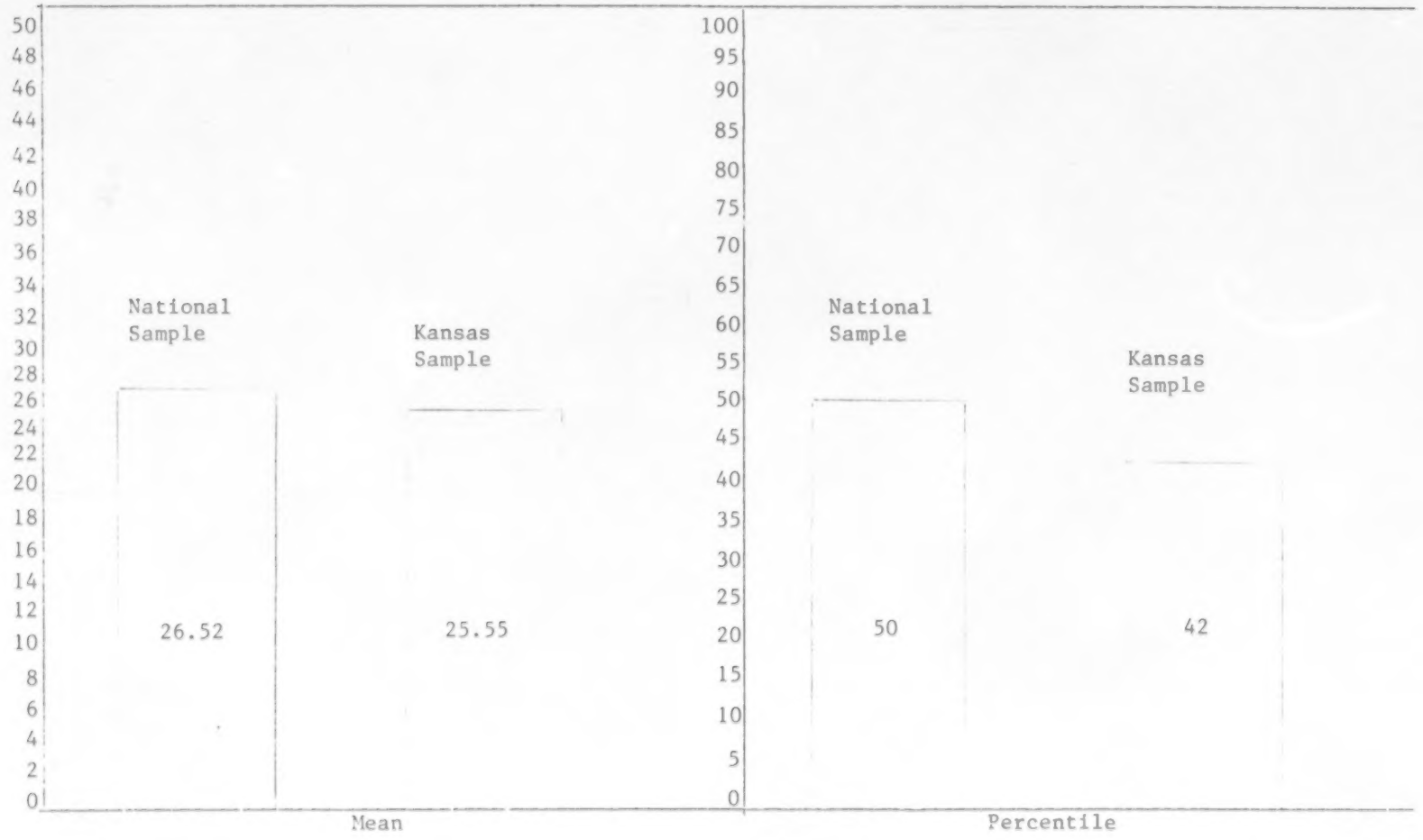
The literature test was administered in 1976 to 1000 sixth graders. It required that students both listen to and read literary passages.

The results presented in Exhibit 12 show that the Kansas sample scored below the national sample by .97 points. This difference placed Kansas in the 42nd percentile.

A look at the item analysis sheet show that of the ten objectives listed, the Kansas sample performed at or above the 50 percent level on all but three. One obvious performance weakness was revealed relating to an understanding of tall tales. The performance level for this objective was recorded at 35 percent correct.

Kansas Learner Needs Assessment Study
State Report
Histograms

Exhibit 12



Grade 6 Test A Look At Literature

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test A Look At Literature

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
1,2,3,4	demonstrate an understanding of realistic narration when heard read.	63
5,6,7	demonstrate an understanding of humorous poetry when heard.	56
8,9,10,11,12	demonstrate an understanding of fanciful dialogue when heard.	55
13,14,15,16,17, 22,23,24,25	demonstrate an understanding of lyric poetry when heard read.	53
26,27,28,29,34, 35,36,37	demonstrate an understanding of realistic dialogue when reading.	53
18,19,20,21	demonstrate an understanding of myths when heard read.	61
30,31,32,33,45, 46,47	demonstrate an understanding of literary description when reading.	41
38,39,40	demonstrate an understanding of lyric poetry when reading.	40
41,42,43,44	demonstrate an understanding of fables when reading.	50
48,49,50	demonstrate an understanding of tall tales when reading.	35

The Estes Reading Attitude Scale - Grade 6

The Estes Reading Attitude Scale is a 20 item test which asks students to rate each question according to how they feel. The scale is as follows:

A = strongly agree
B = agree
C = undecided
D = disagree
E = strongly disagree

The test contains eight positive statements about reading and 12 negative ones. The results are presented according to the percentage of students who responded to each option for each question asked. The responses of the total student sample are presented. They are then broken down and separate results presented for the males and females populations in the sample.

The Kansas Learner Needs Assessment Study
State Report

Grade 6 Group All students Frequency Distribution for the Estes Reading Attitude Scale

No.	ITEM	No.	Percent Responding				
			A	B	C	D	E
1	Reading is for learning but not for enjoyment	1	4.2	8.6	11.3	42.9	32.8
2	Money spent on books is well spent.	2	3.7	6.3	21.2	47.1	21.0
3	There is nothing to be gained from reading books.	3	2.1	3.5	7.0	33.5	53.6
4	Books are a bore.	4	5.1	5.1	15.2	36.5	37.7
5	Reading is a good way to spend spare time.	5	4.9	5.6	10.3	41.0	37.6
6	Sharing books in class is a waste of time.	6	4.4	9.9	20.6	42.6	22.0
7	Reading turns me on.	7	9.4	13.4	29.9	30.6	16.0
8	Reading is only for grade grubbers.	8	3.0	3.8	9.8	31.4	51.8
9	Books aren't usually good enough to finish.	9	4.7	8.0	14.7	46.2	26.0
10	Reading is rewarding to me.	10	4.3	8.5	26.0	38.3	21.5
11	Reading becomes boring after about an hour.	11	9.6	21.1	22.7	29.5	16.9
12	Most books are too long and dull.	12	7.0	10.8	20.1	41.7	19.5
13	Free reading doesn't teach anything.	13	4.9	4.5	10.6	39.1	40.7
14	There should be more time for free reading during the school day.	14	6.3	8.2	18.3	25.8	41.1
15	There are many books which I hope to read.	15	4.9	7.6	11.8	39.1	35.6
16	Books should not be read except for class requirements.	16	4.0	3.8	6.1	26.9	58.5
17	Reading is something I can do without.	17	4.9	4.5	11.9	31.2	46.8
18	A certain amount of summer vacation should be set aside for reading.	18	16.8	18.0	31.9	22.5	9.4
19	Books make good presents.	19	6.4	8.7	26.5	38.4	18.3
20	Reading is dull.	20	6.5	5.4	8.9	28.3	48.3

The Kansas Learner Needs Assessment Study
State Report

Grade 6 Group Boys Frequency Distribution for the Estes Reading Attitude Scale

No.	ITEM	No.	Percent Responding				
			A	B	C	D	E
1	Reading is for learning but not for enjoyment	1	4.2	8.8	12.4	45.6	29.0
2	Money spent on books is well spent.	2	5.6	7.7	18.3	46.1	21.5
3	There is nothing to be gained from reading books.	3	3.2	4.2	6.4	31.1	55.1
4	Books are a bore.	4	7.1	4.6	17.0	33.9	36.7
5	Reading is a good way to spend spare time.	5	8.1	7.4	9.2	42.3	32.4
6	Sharing books in class is a waste of time.	6	7.1	11.0	20.8	41.3	19.4
7	Reading turns me on.	7	14.8	11.6	31.7	27.1	14.1
8	Reading is only for grade grubbers.	8	4.6	5.3	8.5	32.5	48.8
9	Books aren't usually good enough to finish.	9	7.8	6.7	16.6	44.9	23.7
10	Reading is rewarding to me.	10	6.3	12.6	22.4	35.7	21.0
11	Reading becomes boring after about an hour.	11	13.4	20.8	21.6	26.5	17.3
12	Most books are too long and dull.	12	9.2	12.0	20.5	39.9	17.0
13	Free reading doesn't teach anything.	13	5.7	5.7	11.3	34.6	42.4
14	There should be more time for free reading during the school day.	14	8.1	8.5	18.7	23.0	41.7
15	There are many books which I hope to read.	15	7.0	10.8	12.9	38.1	29.0
16	Books should not be read except for class requirements.	16	7.1	4.6	6.7	27.9	52.7
17	Reading is something I can do without.	17	6.7	4.9	12.0	34.3	41.0
18	A certain amount of summer vacation should be set aside for reading.	18	22.8	18.6	30.2	21.1	6.0
19	Books make good presents.	19	10.8	9.4	27.6	33.6	16.4
20	Reading is dull.	20	9.5	7.1	9.2	26.5	44.2

The Kansas Learner Needs Assessment Study
State Report

Grade 6 . Group Girls — Frequency Distribution for the Estes Reading Attitude Scale

No.	ITEM	No.	Percent Responding				
			A	B	C	D	E
1	Reading is for learning but not for enjoyment	1	3.6	8.3	10.4	41.7	35.6
2	Money spent on books is well spent.	2	1.8	4.7	24.4	47.9	20.8
3	There is nothing to be gained from reading books.	3	.7	2.5	7.6	37.1	51.4
4	Books are a bore.	4	3.2	4.7	13.3	39.6	38.8
5	Reading is a good way to spend spare time.	5	1.4	3.6	11.1	40.1	43.0
6	Sharing books in class is a waste of time.	6	1.8	7.9	20.1	45.3	24.1
7	Reading turns me on.	7	3.6	14.7	28.0	34.8	18.3
8	Reading is only for grade grubbers.	8	1.4	2.5	10.4	30.2	55.4
9	Books aren't usually good enough to finish.	9	1.8	9.4	12.2	48.2	28.1
10	Reading is rewarding to me.	10	2.5	3.9	29.3	41.4	21.4
11	Reading becomes boring after about an hour.	11	6.1	21.2	24.1	32.4	16.2
12	Most books are too long and dull.	12	4.7	9.4	19.8	43.2	22.3
13	Free reading doesn't teach anything.	13	4.3	3.6	10.1	42.8	38.8
14	There should be more time for free reading during the school day.	14	3.9	7.9	18.3	28.7	40.5
15	There are many books which I hope to read.	15	2.9	3.9	10.0	40.5	41.9
16	Books should not be read except for class requirements.	16	1.1	2.9	5.8	24.8	65.1
17	Reading is something I can do without.	17	2.5	4.3	11.5	28.4	52.5
18	A certain amount of summer vacation should be set aside for reading.	18	10.7	17.5	34.3	24.3	11.8
19	Books make good presents.	19	1.8	7.9	25.7	43.2	20.0
20	Reading is dull.	20	2.9	3.6	8.3	30.2	52.9

Reading Assessment-Grade 12 Results

The twelfth-grade results are reported similiarly to grade 6. While the same three areas were measured--achievement, functional ability and attitude--fewer tests were administered. The Gates-MacGinitie Reading Test contains only three sections. These sections were supplemented by the construction of a Writing Mechanics test, which measured spelling, capitalization, punctuation, and usage. Added to this was the construction of an Everyday Living Reading Test. When taken together these three tests closely approximate the Iowa Test of Basic Skills. Two other tests, the Hoskins-Sanders Literature Test, and the Estes Reading Attitude Scale, complete the twelfth grade testing battery for reading. As with the Iowa Test of Basic Skills, the Gates-MacGinitie Test was administered twice, in 1977 and 1978. Therefore the results are reported for two sample groups. The remainder of the tests were administered only once.

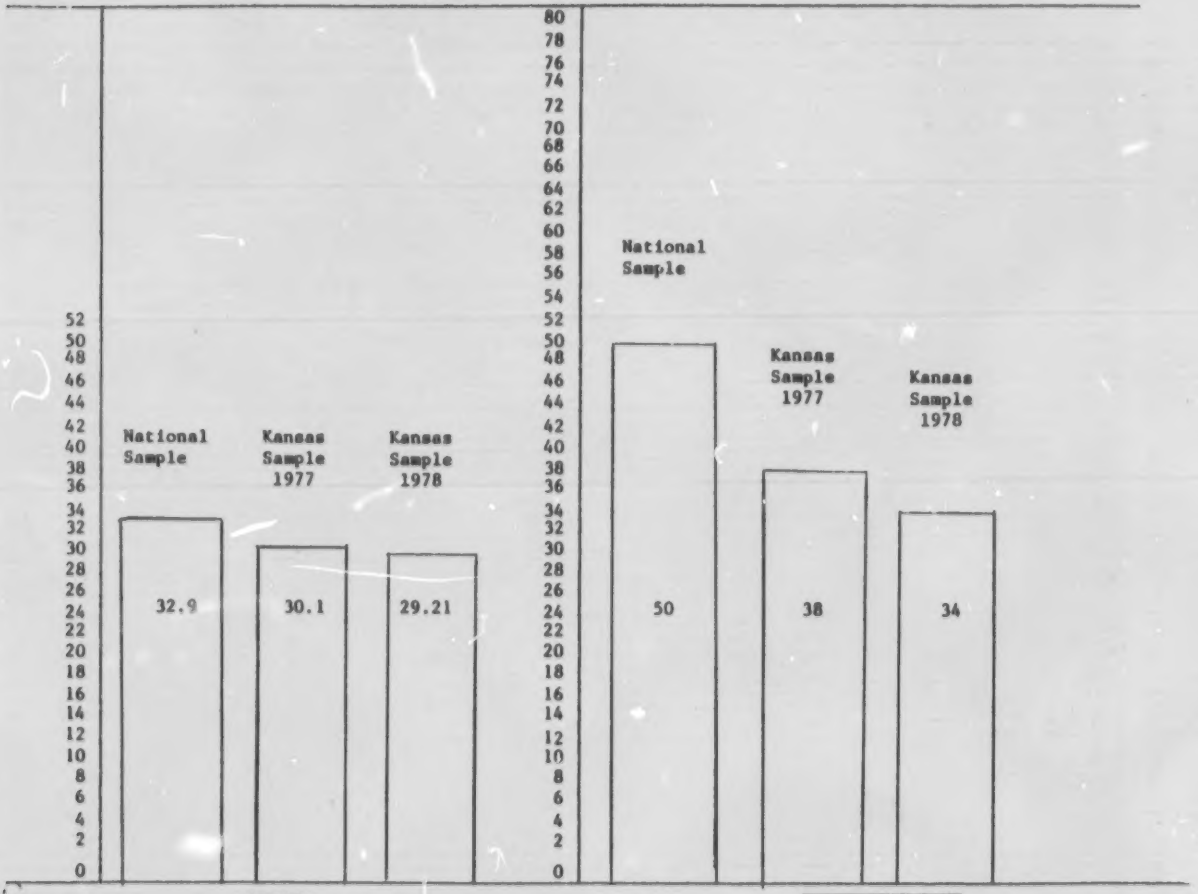
Gates-MacGinitie Reading Comprehension Subtest Results - Grade 12

Exhibit 13 presents the results of the Gates-MacGinitie Reading Comprehension Subtest. Both the 1977 and 1978 Kansas samples failed to score as high as the national sample. The 1977 Kansas sample outscored the 1978 sample. The converted percentile scores shows the 1977 Kansas sample placed at the 38th percentile while the 1978 sample placed at the 34th percentile. Grade equivalent scores are not available for the Gates-MacGinitie tests.

A look at the item analysis sheets shows that, in spite of the low percentile scoring, both Kansas samples scored well on the objectives.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 13



GRADE 12

TEST Comparative Data for Gates-McGinitie

SUBTEST Comprehension

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Reading Comprehension - Gates-McGinities

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
	The student will demonstrate:		
7,29,35, 36,37	ability to recognize & understand important facts & details.	63.2	60.4
1,2,3,4,8, 9,11,13, 15,22,23, 24,26,28, 30,31,32, 33,38,39, 41,44,45, 47,48,50, 51	ability to recognize & understand implied facts & relationships.	57.62	57.81
5,6,10,17, 18,25,27	ability to deduce the meaning of words or phrases from context.	59.5	57.14
19,42	ability to recognize common elements or parallel topics in incidents or paragraphs.	69.5	67.00
12,14,16, 20,21,34, 40,43,46, 49,52	ability to develop generalization from a selection.	48.55	47.64

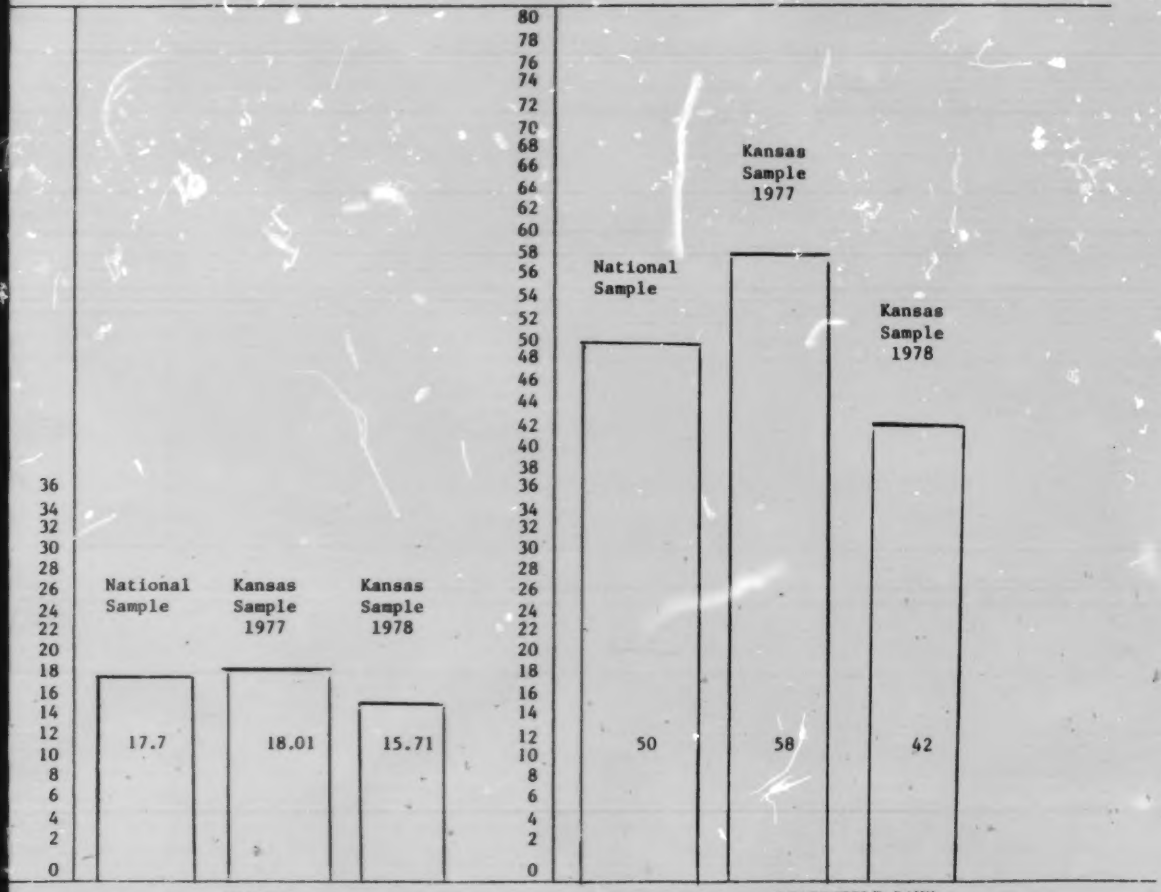
Gates-MacGinitie Speed and Accuracy Subtest Results - Grade 12

The results of this subtest show that the 1977 Kansas sample outscored the national sample by .31 points, while the 1978 sample failed to score at the national level by 1.99 points. These scores placed Kansas at the 58th percentile in 1977 and the 42nd percentile in 1978.

A look at the item analysis sheets shows that the 1977 sample group outscored the 1978 sample on all of the four objectives. Both groups recorded poor showing on ability to quickly and accurately deduce the meaning of works or phrases from context. Conversely, both groups scored extremely high on ability to quickly and accurately develop generalization from a selection.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 14



GRADE 12 TEST Comparative Data for Gates-McGinitie SUBTEST Speed and Accuracy

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Speed & Accuracy - Gates-McGinities

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct 1977	Combined Average Percent Correct 1978
	The student will demonstrate:		
2,10,14, 15,16,18, 19,22,27, 28,34	ability to quickly & accurately recognize & understand important facts & details.	47.15	40.82
3,4,5,7,8, 9,11,12, 21,23,24, 25,30,31, 33,35	ability to quickly & accurately recognize & understand implied facts & relationships.	52.88	47.38
13,17,20, 26,29,32, 36	ability to quickly & accurately deduce the meaning of words or phrases from context.	33.57	25.29
1,6	ability to quickly & accurately develop generalizations from a selection.	94	92

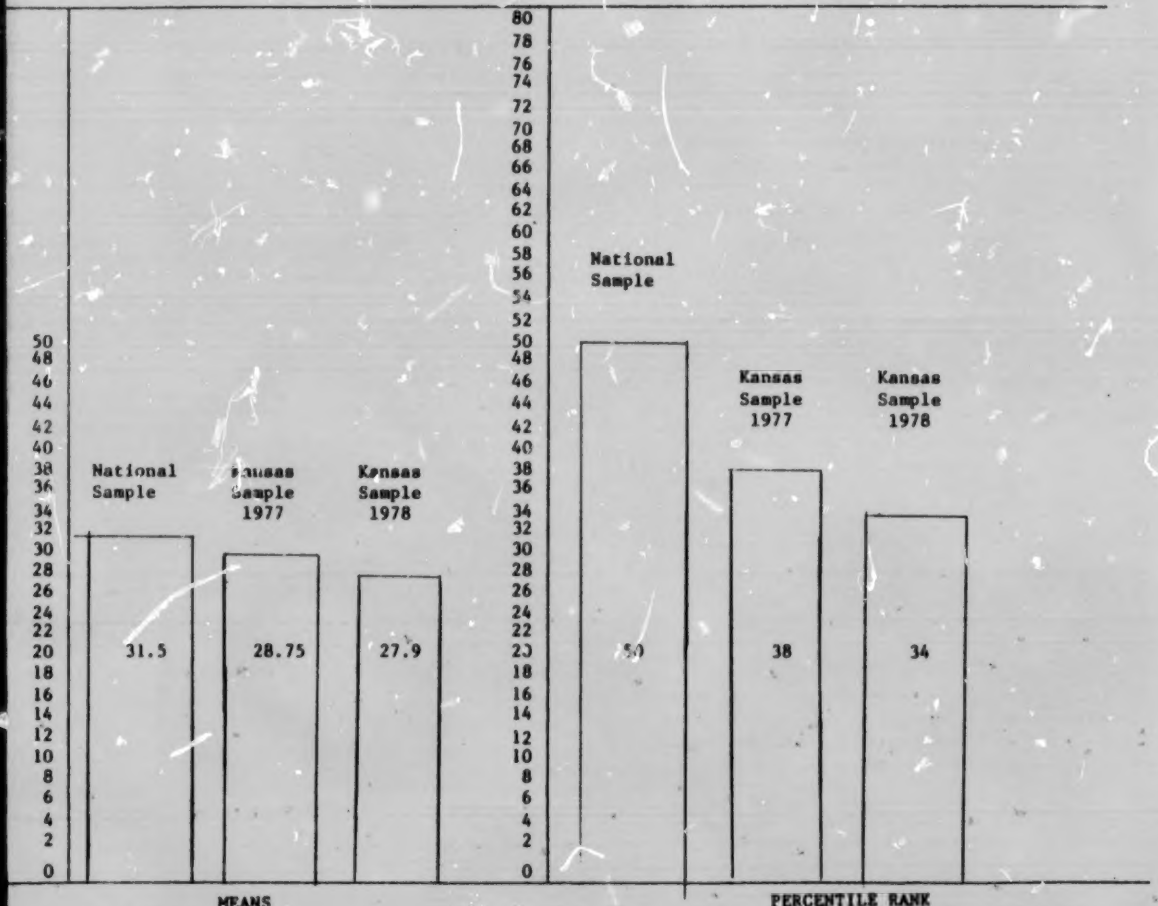
Gates-MacGinitie Vocabulary Subtest Results

As previously stated no objectives were developed for the vocabulary area, nor does the Gates-MacGinitie Test identify objectives or skills area for vocabulary. The vocabulary words included on this subtest are those considered to be familiar to grade 12 students.

Exhibit 15 presents the means and percentile ranks for the 1977 and 1978 Kansas samples as well as the comparative norm sample data. Both the 1977 and 1978 Kansas samples scored lower than the national sample, with the 1978 sample scoring lower than the 1977 sample. The national sample scored a mean of 31.5. The Kansas samples scored a mean of 28.75 in 1977, and 27.9 in 1978. This placed the state at the 38th and 34th percentile rank for those years.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 15



GRADE 12 TEST Comparative Data for Gates-McGinitie SUBTEST Vocabulary

Writing Skills Results - Grade 12

The writing skills test is a 138 item test covering four areas; spelling, capitalization, punctuation and usage. This test was administered in 1977 to 600 twelfth grade students. Because it was specially constructed for use in this study no comparative norm data is available.

The test is organized as follows:

Item nos.	Area measured
1-75	Spelling
76-102	Capitalization
103-118	Punctuation
119-138	Usage

This test did not provide separate scores for each section but instead yielded one overall score for the entire test. With the exception of the Capitalization section discrete objectives are not available. The Spelling, Punctuation and Usage sections each contain a single general objective for which a single item analysis on the total number of questions is available. The results of this test are:

No. Items	Possible Right	Mean	S.D.	Range
138	138	85.72	20.32	9-131

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Writing Skills: Spelling

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct	Comments
1-75	The student will demonstrate knowledge of the use of: double letter; final e; f, ft, ph, v substitutions; interchanged letters; c, ck, k substitutions; l, el, le substitutions; miscellaneous & multiple errors; omitted letters, added letters; plural forms; r, er, or substitutions; s, sc, sh, c, ch, t, z substitutuions; t, ed substitutions; w, u, ou, ue substitutions; x, xs, xc, cc substitutions; y, ey, i substitutions; learned exceptions to speling rules.	55.87	

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Writing: Capitalization

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct	Comments
	The student will demonstrate knowledge of capitalization of:		
85	pronoun I.	95	
87, 94	names of persons or animals & initials of persons.	93	
92	words indicating family relationship when used specifically & without a possessive pronoun.	91	
80	titles of respect, honor or rank.	93	
76, 88, 96, 100	first word of a sentence.	78.75	
97	first word in a quotation.	66	
93, 102	days of the week, names of months.	93.5	
78	titles of books, music, magazines, etc.	87	
101	nouns which designate definite geographic portions of the country.	92	
81, 82, 84, 99	names of rivers, oceans, canals, mountains, etc.	93.75	
91	names of buildings, schools, parks, etc.	89	
95	proper adjectives.	94	
90	names of specific organizations.	83	

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Writing Skills: Punctuation

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct	Comments
103-118	The student will demonstrate knowledge of the use of: period, question mark, comma, apostrophe, double quotation marks, colon, semicolon, & hyphen.	50.88	

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Writing Skills: Language Usage

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct	Comments
119-138	The student will demonstrate knowledge of the use of: pronouns, verbs, adjectives, adverbs, & prepositions.	59.63	

Everyday Living Reading Results - Grade 12

As with the Writing Skills test, the Everyday Living Reading Skills Test was specially constructed for use in this study. This test measured the functional reading ability of grade 12 students. Because it was specially constructed, no comparative norm data are available. Item Analyses and objectives, however, are available and are included here.

The results of the test are reported as follows:

No. Items	Possible Right	Mean	S.D.	Range
75	75	54.33	12.4	11-71

A look at the item analysis sheets and performance on objectives shows that in every instance students performed well on this test.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Everyday Reading

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will demonstrate ability to read with understanding the following examples of functional material:	
1, 2, 3, 4	personal letter.	74.25
5, 6, 7, 8	driver's license classification.	53.5
9, 10	appliance guarantee.	67
11, 12, 13, 14, 15, 16, 17	Kansas mileage map.	82.14
18, 19, 20, 21	change of address order.	77
22, 23, 24, 25, 26, 27	dictionary page.	59.17
28, 29, 30, 31, 32	employment application.	87.2
33, 34, 35, 36	income tax form.	78.5
37, 38, 39, 40	T.V. guide.	66.75
41, 42, 43, 44	automobile liability insurance.	63.75
45, 46, 47	seed catalog order.	67
48, 49, 50	voter registration application.	85
51	accident chart.	49.7
52, 53, 54, 55	recipe.	84.25

III-59

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Everyday Reading (cont'd.)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
56, 57, 58, 59 60	sample driver's license test.	76.2
61, 62, 63, 64	blank check.	71.75
65	time schedule.	62.6
66	sign.	69.6
67	notice.	77.3
68	table of contents.	55.4
69	label.	69.6
70, 71	cartographic chart.	68.75
72, 73, 74, 75	map.	75.25

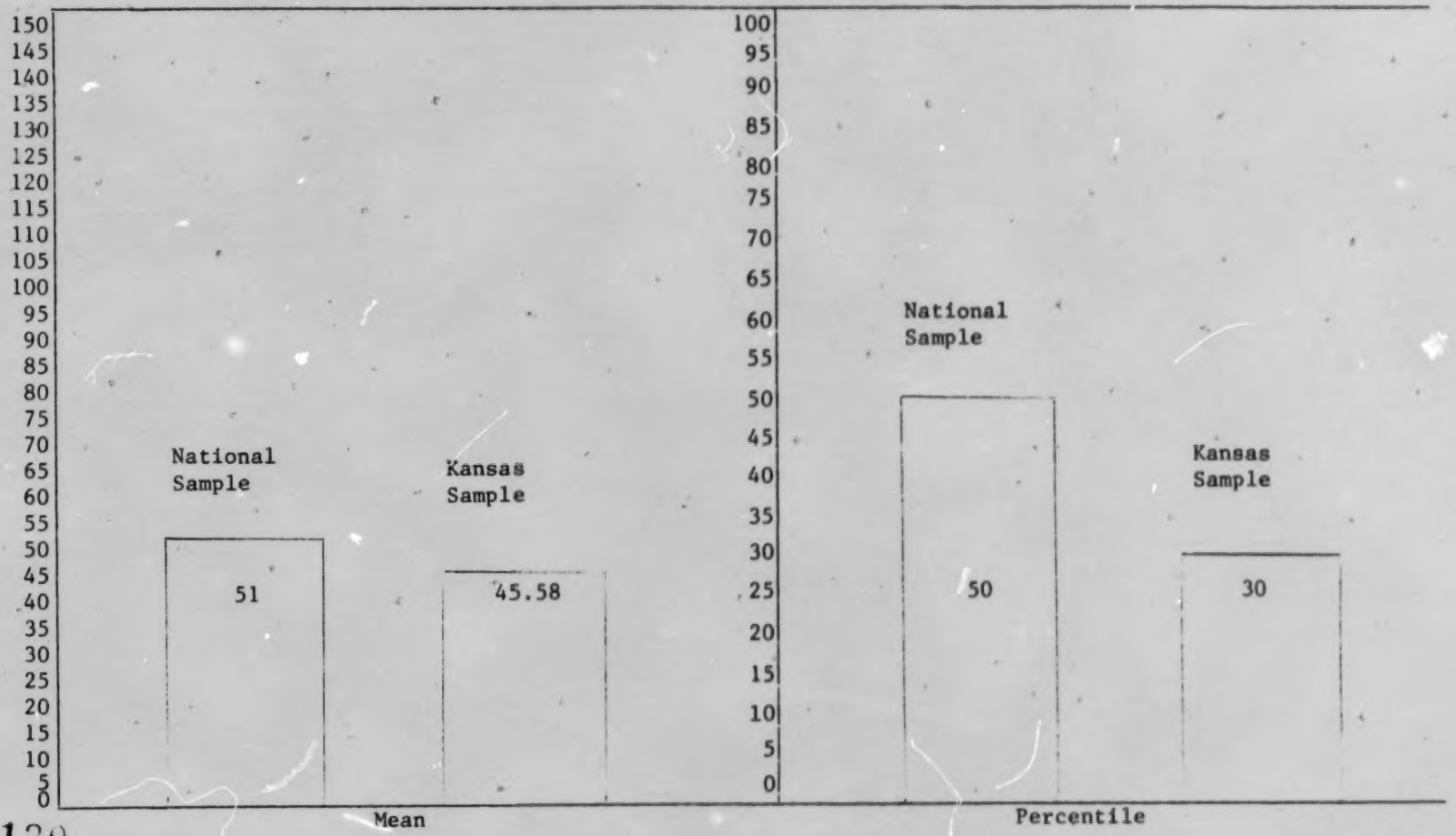
Hoskins-Sanders Literature Test Results - Grade 12

Exhibit 16 presents the grade 12 results for literature. The Kansas sample scored below the national average by 5.42 points, a difference reflected in a national mean of 51 and Kansas mean of 45.58. This difference placed Kansas at the 30th percentile.

A look at the item analysis sheets reflects this difference. Of the fourteen objectives listed, the strongest performance on an objective fell at a low 36.4 percent-correct-total. The lowest performance was 20.2 percent correct.

Kansas Learner Needs Assessment Study
State Report
Histograms

Exhibit 16



Grade 12 Test Literature

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Literature

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
47, 49, 52, 53, 57, 70, 148	demonstrate understanding of basic philosophical themes & the universal conditions & problems of man that form the basis of much literature.	20.2
42, 43, 66, 81, 89, 96, 97, 99, 106, 107, 116, 130, 14	demonstrate familiarity with character of literature.	30.5
4, 7, 18, 29, 60, 62, 74, 78, 114	demonstrate understanding of major literary genres, subgenres, & types & authors who produced them. (novel, poem, short story, drama, lyric, ballad, sonnet, comedy, tragedy, personal essay, auto-biography.)	27.7
13, 29, 30, 110, 134, 137, 17, 121	demonstrate ability to interpret a literary text literally.	28.1
9, 16, 17, 21, 37, 41, 45, 61, 68, 86, 103, 104, 112, 117, 124, 136, 138, 140	demonstrate understanding of literature of particular historical period or literature relating to or influencing history.	27.5
32, 34, 40, 50, 67, 129, 123	demonstrate knowledge of understanding of major poets & poetry.	25.7

The Kansas Learner Needs Assessment Study
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Item Analysis

Grade 12 Test Literature (cont'd)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
5, 12, 36, 39, 44, 46, 51, 58, 63, 65, 73, 79, 80, 82, 85, 90, 93, 98, 100, 108, 107	demonstrate understanding & knowledge of major ideas about a character, plot, setting, or events in literary texts.	30.3
15, 20, 23, 38, 42, 54, 55, 72, 75, 142, 144, 146, 147, 24, 115, 126	demonstrate understanding of early literature, oral & written, as in Greek works, tall tales, myths, ballads, epics, legends.	36.1
25, 94, 119, 132, 135, 141, 143	demonstrate ability to recognize a writer through his style, theme, subject matter.	31
64, 77, 84, 91, 93, 95, 111	demonstrate understanding of exemplary or explanatory phrases evoking major thoughts or themes or key prose or poetry.	36.4
10, 11, 28, 71, 76, 92, 101, 102, 120, 128, 133, 150	demonstrate understanding of important aspects of major literary figures lives (as mileau, family, personality) that affect literary works.	33.8

The Kansas Learner Needs Assessment Study
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Item Analysis

Grade 12 Test Literature (cont'd.)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
3, 22, 33, 69, 88, 113, 118, 139, 122, 125, 127	demonstrate understanding of aspects of the developmental history of literature and its effects upon other areas of learning.	27.3
19, 26, 35, 48, 59, 105, 131	demonstrate ability to identify a character or author of a masterwork by a key phrase or description.	29.4
8, 27, 31, 56, 83, 87, 145, 149	demonstrate understanding of key literary devices of vocabulary (as simile, metaphor, hyperbole, alliteration, onomatopoeia, oxymoron, idyll, epitaph).	31.2

Estes Reading Attitude Scale Results - Grade 12

The reading attitude test administered to grade 12 is identical to one administered at the sixth-grade level. The results are reported here in the same manner with separate results listed for the total sample population, male sample population and female sample population. The percent totals for each option that students selected in responding to questions corresponds to the following scale:

A = strongly agree
B = agree
C = undecided
D = disagree
E = strongly disagree

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Grade 12 Group All students Frequency Distribution for the Estes Reading Attitude Scale

No.	ITEM	No.	Percent Responding				
			A	B	C	D	E
1	Reading is for learning but not for enjoyment	1	3	6.2	10.2	43.8	36.9
2	Money spent on books is well spent.	2	2.5	6.9	17.9	57.1	15.6
3	There is nothing to be gained from reading books.	3	15	1.1	4.4	33.	60.6
4	Books are a bore.	4	4	6.7	14.8	47.5	26.7
5	Reading is a good way to spend spare time.	5	4	9.1	14.9	49.1	22.5
6	Sharing books in class is a waste of time.	6	4.9	8.4	32	45.3	9.1
7	Reading turns me on.	7	10.8	23.6	35.7	22.2	6.6
8	Reading is only for grade grubbers.	8	2.3	5.1	8.6	49.7	33.2
9	Books aren't usually good enough to finish.	9	3.3	6.2	10.5	51.7	27.8
10	Reading is rewarding to me.	10	3.7	8.7	19.2	47.6	19.8
11	Reading becomes boring after about an hour.	11	9.3	20.6	20.6	37.4	11.8
12	Most books are too long and dull.	12	6.3	15.1	21.4	46.4	10.5
13	Free reading doesn't teach anything.	13	1.2	3.2	9.8	52.4	33.2
14	There should be more time for free reading during the school day.	14	4.4	8.4	20.9	38.0	28.3
15	There are many books which I hope to read.	15	3.5	11.2	17.6	45.3	22.3
16	Books should not be read except for class requirements.	16	2.3	2.6	7.7	44.6	42.4
17	Reading is something I can do without.	17	3.5	6.2	15.6	43.6	30.9
18	A certain amount of summer vacation should be set aside for reading.	18	9.3	17.0	30.7	33.9	8.8
19	Books make good presents.	19	4.4	10.0	32.3	41.8	11.2
20	Reading is dull.	20	6.3	8.3	13.2	39.9	30.8

The Kansas Learner Needs Assessment Study
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Grade 12 Group Girls Frequency Distribution for the Estes Reading Attitude Scale

No.	ITEM	No.	Percent Responding				
			A	B	C	D	E
1	Reading is for learning but not for enjoyment	1	1.5	3.7	5.1	44.1	45.6
2	Money spent on books is well spent.	2	.7	5.1	14.3	61.8	18
3	There is nothing to be gained from reading books.	3	0	.4	1.8	29.4	68.4
4	Books are a bore.	4	1.5	2.9	9.9	49.3	36.4
5	Reading is a good way to spend spare time.	5	1.1	4.0	9.9	51.8	33.1
6	Sharing books in class is a waste of time.	6	1.8	4.4	32.0	51.1	10.7
7	Reading turns me on.	7	5.1	16.2	39.3	30.5	8.8
8	Reading is only for grade grubbers.	8	0	3.3	4.4	50.0	42.3
9	Books aren't usually good enough to finish.	9	0	3.3	6.3	55.1	35.3
10	Reading is rewarding to me.	10	.7	4.0	15.8	51.8	27.6
11	Reading becomes boring after about an hour.	11	2.6	14.7	19.1	45.2	18.4
12	Most books are too long and dull.	12	.4	8.1	16.9	57.7	16.9
13	Free reading doesn't teach anything.	13	1.1	.7	2.9	52.2	43.0
14	There should be more time for free reading during the school day.	14	1.8	8.8	16.2	38.6	34.6
15	There are many books which I hope to read.	15	1.1	5.5	9.6	51.8	32.0
16	Books should not be read except for class requirements.	16	.4	1.5	3.3	36.4	58.5
17	Reading is something I can do without.	17	1.8	3.3	10.3	42.6	41.9
18	A certain amount of summer vacation should be set aside for reading.	18	4.4	14.7	24.3	43.8	12.9
19	Books make good presents.	19	2.6	6.3	25.4	50.7	15.1
20	Reading is dull.	20	.7	3.7	7.7	43.4	43.8

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Grade 12 Group Boys Frequency Distribution for the Estes Reading Attitude Scale

No.	ITEM	No.	Percent Responding				
			A	B	C	D	E
1	Reading is for learning but not for enjoyment	1	4.5	8.7	14.7	44.1	28.0
2	Money spent on books is well spent.	2	3.5	8.7	21.7	52.8	13.3
3	There is nothing to be gained from reading books.	3	1.0	1.7	7.0	36.7	52.8
4	Books are a bore.	4	6.3	10.5	19.2	45.8	17.5
5	Reading is a good way to spend spare time.	5	6.6	14.3	19.5	46.3	12.5
6	Sharing books in class is a waste of time.	6	7.7	12.6	32.2	39.2	8.0
7	Reading turns me on.	7	16.3	30.4	32.2	14.2	4.8
8	Reading is only for grade grubbers.	8	4.2	6.6	12.9	49.7	24.5
9	Books aren't usually good enough to finish.	9	6.6	9.1	15.0	48.3	19.9
10	Reading is rewarding to me.	10	6.6	13.1	22.5	43.3	12.5
11	Reading becomes boring after about an hour.	11	15.4	26.6	21.7	30.1	5.6
12	Most books are too long and dull.	12	11.2	21.7	25.9	36.4	4.5
13	Free reading doesn't teach anything.	13	1.4	5.6	16.1	53.5	23.1
14	There should be more time for free reading during the school day.	14	6.3	8.4	25.5	37.1	22.7
15	There are many books which I hope to read.	15	5.6	16.4	24.8	40.6	12.6
16	Books should not be read except for class requirements.	16	4.2	3.8	12.2	52.4	26.9
17	Reading is something I can do without.	17	4.9	9.1	21.0	44.4	20.6
18	A certain amount of summer vacation should be set aside for reading.	18	14.0	18.9	37.1	25.2	4.9
19	Books make good presents.	19	5.9	14.0	39.2	34.3	6.6
20	Reading is dull.	20	11.5	12.9	18.2	36.7	18.5

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Summary Sheet for:

Reading Assessment

Test	Number Items	National Mean	Kansas Mean	National S.D.	Kansas S.D.	Kansas %ile Rank	Grade Equivalent
Grade 6							
1976							
Literature		26.52	25.55	7.69	8.16		
1977							
Iowa Test of Basic Skills							
Vocabulary		25.0	23.03	7.50	10.32	32	6.4
Reading Comprehension		40.0	38.38	6.75	13.87	37	6.6
Spelling		20.0	20.30	7.83	8.85	53	6.8
Capitalization		23.5	21.64	8.0	8.36	36	6.6
Punctuation		20.0	20.42	7.67	6.21	51	6.8
Language Usage		15.5	14.28	7.67	6.21	28	6.3
Map Reading		18.5	18.62	6.60	6.30	51	6.9
Reading Graphs & Tables		15.5	15.65	6.58	5.28	51	6.8
Reference Materials		34.0	33.46	6.86	10.93	38	6.6
Estes Reading Attitude Scale							
Total Sample			76.17		12.93		
Boys			73.72		14.28		
Girls			78.67		10.82		
1978							
Iowa Test of Basic Skills							
Vocabulary		25.0	25.72	7.50	9.31	54	6.8
Reading Comprehension		40.0	40.59	6.75	13.55	53	6.8
Spelling		20.0	21.85	7.83	9.30	71	7.1
Capitalization		23.5	20.54	8.0	8.45	25	6.3
Punctuation		20.0	20.38	7.67	7.66	51	6.8
Language Usage		15.5	14.65	7.67	6.37	34	6.4
Map Reading		18.5	19.10	6.60	6.62	55	6.9
Reading Graphs & Tables		15.5	15.7	6.58	5.76	52	6.8
Reference Materials		34.0	33.19	6.86	10.98	37	6.6

Summary Sheet for:
Reading Assessment

Test	Number Items	National Mean	Kansas Mean	National S.D.	Kansas S.D.	Kansas %ile Rank	
Grade 12							
1976							
Literature		51.00	45.58		10.09		
1977							
Gates-M Reading Test							
Speed and Accuracy		17.7	18.01	6.1	7.63	58	
Vocabulary		31.5	28.75	9.7	8.97	38	
Comprehension		32.9	30.10	9.9	10.51	38	
Everyday Reading Test			54.33		12.4		
Writing Skills			85.72		20.32		
Estes Reading Attitude Test							
Total Sample			74.74		13.13		
Boys			69.31		13.35		
Girls			80.48		10.14		
1978							
Gates-M Reading Test							
Speed and Accuracy		17.7	15.71	6.1	6.00	42	
Vocabulary		31.5	27.90	9.7	9.35	34	
Comprehension		32.9	29.21	9.9	10.54	34	

Results from the Basic Skills Area

Mathematics

The mathematics assessment program was carried out in April of 1975 and 1978. Approximately 1400 sixth- and 1200 twelfth- grade students from 33 participating districts were tested during this period against some 85 specific learning objectives determined to be the cognitive skills levels that students in those grades should have mastered.

The objectives were organized into clusters for the purposes of categorizing skills. The sixth grade objectives were organized into a) operations, b) whole numbers, c) fractions and decimals, d) sets, e) word problems, f) geometry, and g) percents and probabilities. The twelfth grade objectives were organized into a) whole numbers, b) fractions, percents, and decimals, c) problem solving, and e) measurements.

Test Selection

Following a thorough survey of currently available tests, the Iowa Test of Basic Skills was identified as the most appropriate measurement of the sixth-grade learning objectives. At the twelfth grade level the California Achievement Test was chosen. Both tests are valid and reliable measures of student performance. These tests were supplemented by the construction, at both the sixth- and twelfth-grade levels, of a mathematics evaluation test. This was carried out in an effort to provide a second measure of students performance levels.

Descriptions of Tests

Iowa Test of Basic Skills, Form 12 (grade 6). The skills measured by the Iowa Test of Basic Skills Mathematics Test are classified into math concepts and math problems. Level 12, the level designated for grade 6, contains 45 questions relating to math concepts, and 31 questions relating to math problem solving.

The ITBS differs from most other elementary achievement test batteries in that they are only concerned with generalized intellectual skills and abilities and do not provide separate measures in the content subjects. In addition, special effort has been made throughout the entire battery to place as much emphasis as possible upon functional values of what has been taught. The pupil's ability to use the skills acquired is tested in situations approximating as closely as is possible in a pen and paper test, the actual situations in which he may have occasion to use these skills.

California Achievement Test (CAT), 1970 Edition, Mathematics section. The CAT, 1970 Edition was designed for the measurement, evaluation, and analysis of school achievement. The emphasis is upon content and objectives in the basic curricular areas of reading, mathematics, and language. The CAT is designed to measure the skill with which the student performs in curricular tasks which are basic to learning progress.

The CAT generally measures 1) the ability to understand the meaning of the content material presented, 2) the performance of the student in applying rules, facts, concepts, and principles of problem solving in the basic curricular materials, and 3) the level of performance of the student in using the tools of mathematics in progressively more difficult situations.

In the Math Computation section the student's ability to add, subtract, multiply, and divide whole numbers and fractions is tested. For each basic operation there are 12 items which involve working with denominate numbers as well as with nondenominate numbers.

The Math Concepts and Problems section is divided in two parts. The Concepts section contains 35 items which measure the student's understanding and use of math concepts in a variety of contexts. Among the basic concepts presented are those which involve signs and symbols, number systems, and place

values. Also tested are concepts which relate to problems in geometry and algebra.

The Problems section is a 15 item test designed to measure the student's ability to comprehend and correctly answer a variety of word problems ranging from those which involve basic one-step operations to those which involve percentages and averages. These problems require both an understanding of fundamental concepts and an ability to perform basic computations.

Mathematics Evaluation - Grade 6

This is a 62 item test developed for use in the Kansas Learner Needs Assessment Study. It uses a multiple choice format with a mathematical number or story problem followed by a choice of five answers. The test samples the student's ability to work addition, subtraction, multiplication, and division problems. These problems involve whole numbers, fractions, decimals, percents, and measurements. Also tested are concepts involving knowledge of factoring, equivalency, place value, and probabilities.

Because the Math Evaluation test is a locally-developed test, no national norms are available.

Mathematics Evaluation - Grade 12

This is a 45 item test developed for use in the Kansas Learner Needs Assessment Study. It also uses a multiple choice format with mathematical numbers or story problems followed by a choice of four anwers. This test is designed to measure the student's cumulative learning and performance on a hierarchy or mathematical skills ranging from basic operations, decimals, sets, ratios, to algebra. Because this is a locally developed test, no national norms are available.

Results

The results in the following section are reported in three forms. For the Iowa Test of Basic Skills, Kansas means, percentile ranks and grade equivalents are presented in the form of histograms. These histograms also contain a comparison of the performance of grade 6 with the national norm group. Following the histograms is the list of objectives or skills areas measured by the subtest along with the item analysis in percent-of-correct responses for the Kansas sample. The Iowa Test of Basic Skills for mathematics was administered in 1978 only.

This same information is presented for the California Achievement Test. This test was also administered in 1978 only.

The specially constructed Mathematics Evaluation Tests have no norm group results by which comparative performance can be measured. The results of these tests are presented in means, standard deviations and range scores, as well as item analysis of the objectives. These tests were given in 1975 only.

Summary sheets containing all the information presented in the histograms, as well as central tendency information about the Mathematics Evaluation Tests, can be found at the end of this section.

Subscore Results for the Iowa Test of Basic Skills

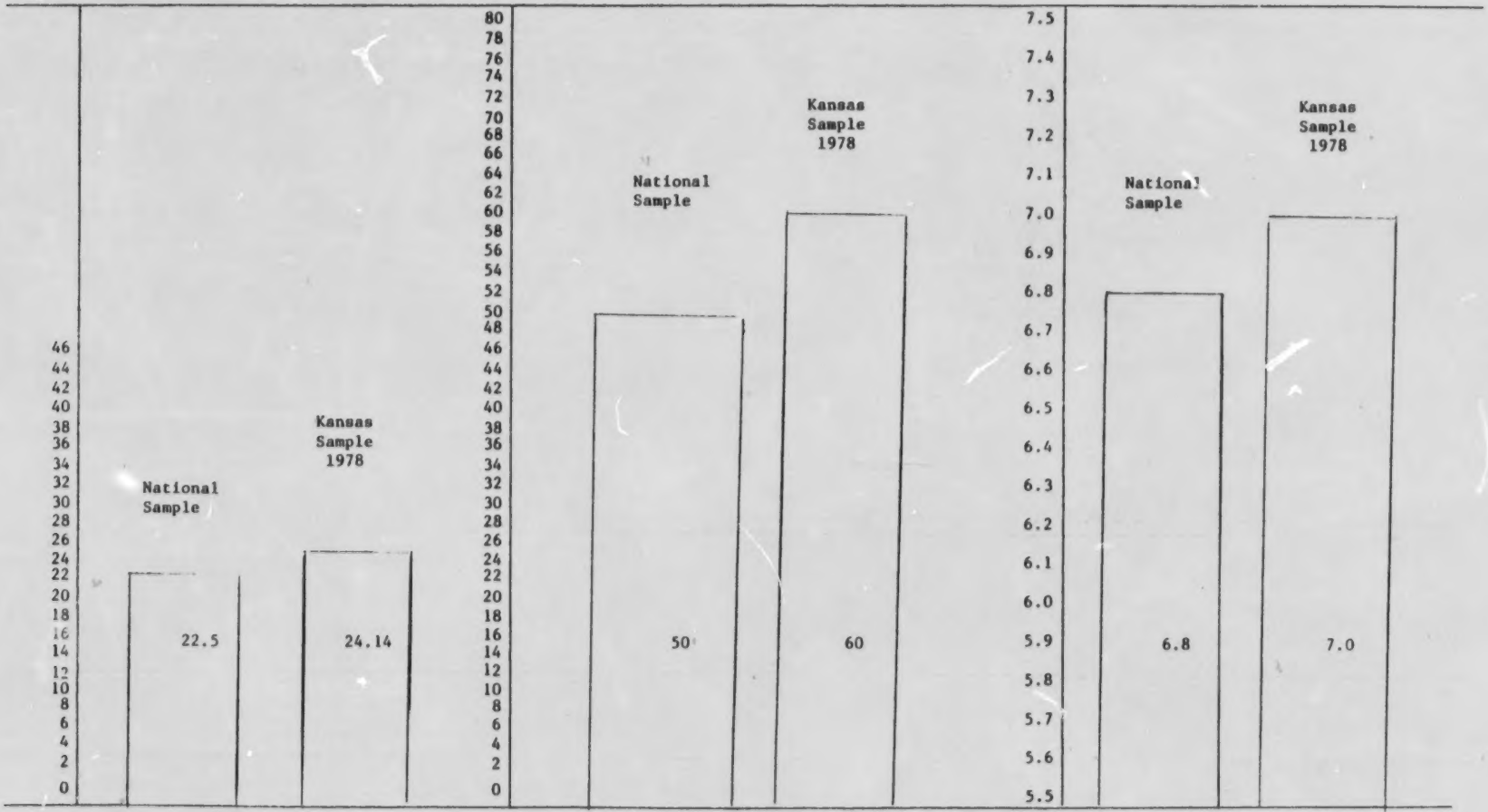
Math Concepts - Grade 6

Exhibit 17 presents the results of the ITBS math concepts subtest. As the histogram shows, the Kansas sample scored higher than the national sample by 1.64 points. This placed Kansas at the 60th percentile with a grade equivalence of 7.0.

A review of the item analysis performance for the objectives shows that of the 25 objectives listed the Kansas sample scored below the 50 percent correct level on only seven of the objectives.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 17



GRADE 6 TEST Comparative Data for Iowa Test of Basic Skills SUBTEST Math Concepts

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The Kansas Learner Needs Assessment Study
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Item Analysis

Grade 6 Test ITBS - Math Concepts

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will demonstrate knowledge in the areas of:	
54,90	recognizing kinds & parts of geometric figures.	51
64,78	recognizing angles & triangles.	51
70,83	dimensions, parameters, & areas of polygons.	39.5
86	parts & area of a circle.	53
80	measurements of length.	32
56	liquid & dry measurements of capacity.	55
52,73	place value & expanded notation.	71
59,62,67,92,94	properties of numeration & number systems.	58
84,93	real numbers.	51
76	ratio & proportion.	56
88	sets.	60
69	rounding whole numbers.	78
89	partitions & measurement.	41
60,66,79	fundamental operations with whole numbers.	60
156	estimating results with whole numbers.	57

The Kansas Learner Needs Assessment Study
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Item Analysis

Grade 6 Test ITBS - Math Concepts (cont'd)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will demonstrate knowledge in the areas of:	
77	reading and writing decimals.	43
85	relative value of decimals.	35
82	rounding decimals.	57
91	performing fundamental operations.	52
95	estimating results.	41
58,68,72,87	equations, inequalities, & number sentences.	57.8
57,81	relative values of fractions.	48.5
55,61,74	equivalence of fractions.	71
63,75	terms of fractions.	59.5
65,71,96	performing fundamental operations with fractions.	50.67

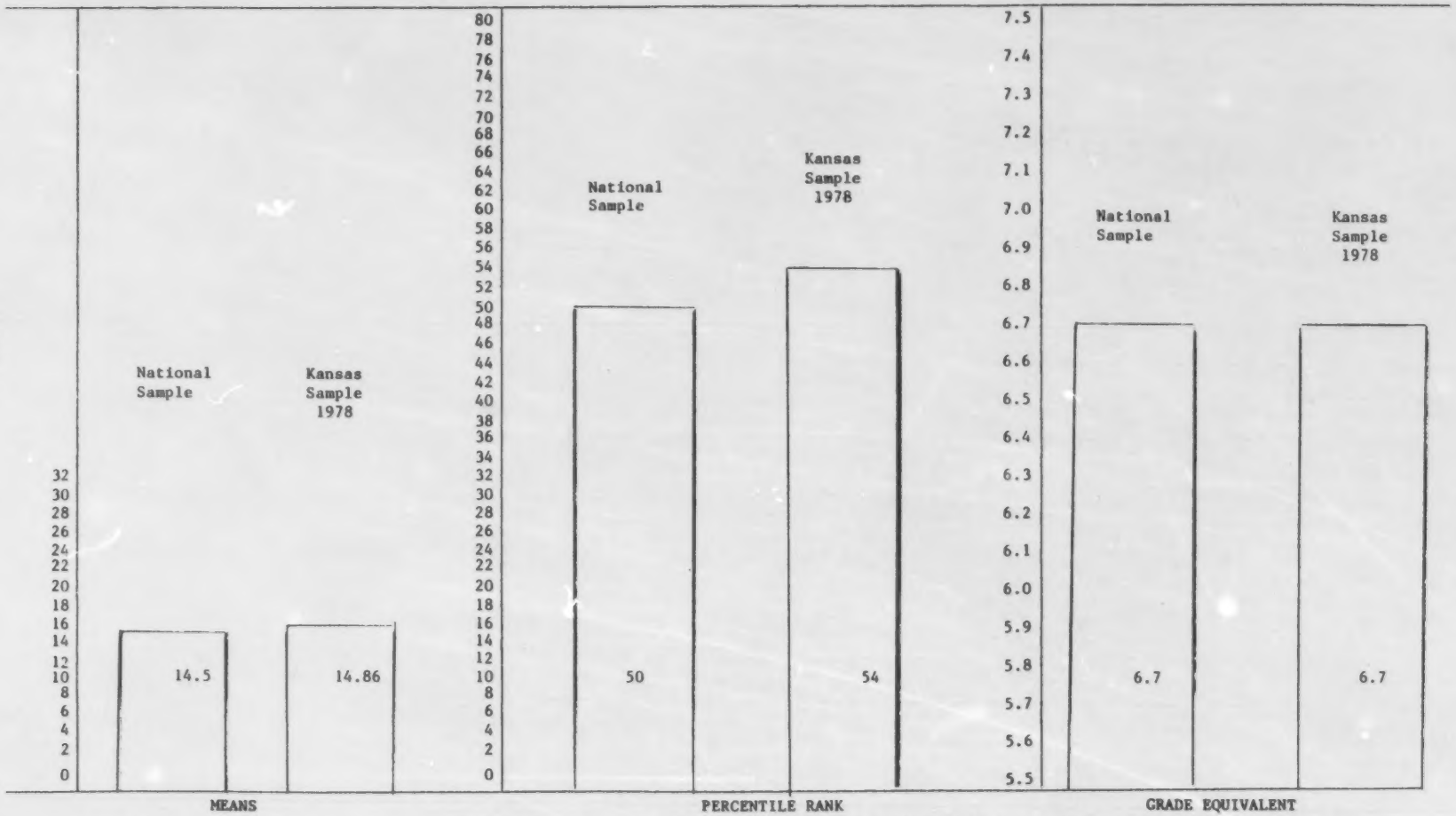
ITBS Math Problem Solving Subtest Results - Grade 6

The Kansas sample also scored higher than the national sample on the math problem solving subtest. As Exhibit 18 shows the national sample scored a mean of 14.5, while the Kansas sample scored 14.86. This placed the Kansas sample at the 54th percentile.

A review of the objectives and corresponding item analysis show a varied range in performance. Of the 18 objectives measured the sample scored low on 6, in the medium range on 7, and fairly high on 5.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 18



GRADE 6 TEST Comparative Data for Iowa Test of Basic Skills SUBTEST Math Problem Solving

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The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Math Problem Solving

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will demonstrate knowledge in the area of:	
40,42,48,50,51	adding and subtracting whole numbers.	61
44,47	multiplying whole numbers.	53
45	combined addition & multiplication of whole numbers.	28
54	division of whole numbers.	42
41,58,59	addition of fractions.	48
52,56	subtraction of fractions.	45
43,46,55	multiplication of fractions.	46
69	combined subtraction & multiplication of fractions.	27
49	subtraction of measurements.	74
62	combined addition & subtraction of measurements.	34
63	addition of currency.	65
64	subtraction of currency.	62
70	combined addition & subtraction of currency.	30
67	multiplication of currency.	66
53,61,65	combined addition & multiplication of currency.	45
66	division of currency.	49

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test ITBS - Math Problem Solving (cont'd.)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
68	multiplication of percents.	25
60	division using geometry.	30

Mathematics Evaluation - Grade 6

The Mathematics Evaluation Test for grade 6 can be said to test the combination of the objectives measured by the ITBS.

Although no comparative data is available, the performance of the Kansas sample on this test is revealing. Of the total possible number of right responses, 66, the mean or average number correct was 27.9, meaning that most of the sample group answered less than half of the test items correctly. The range of scores bears this out. The range for this test was 0-55, meaning that the lowest score a student or students received on this test was 0, while the highest score was 55.

The complete set of data is as follows:

No. Items	Possible Right	Mean	S.D.	Range
66	66	27.9	10.04	0-55

A look at the item analysis by objective shows mixed performance. Of the 23 objectives measured, the sample scored extremely high on three, in the middle range on 11, and the low to poor range on nine.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Mathematics Evaluation

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
1, 2, 3, 4	demonstrate an ability to add and subtract whole numbers.	86
5, 6	demonstrate an ability to multiply whole numbers.	82
8, 44, 45	demonstrate ability to divide whole numbers.	58
7	demonstrate ability to divide whole numbers with a two-place divisor.	26
9, 10	demonstrate ability to add and subtract decimal values.	75
11, 28, 29	demonstrate ability to multiply and divide decimal values.	44
14, 49	demonstrate ability to add fractions.	41
13, 46	demonstrate ability to subtract fractions.	51
16, 17, 48	demonstrate ability to multiply fractions.	46
18, 30, 47	demonstrate ability to divide fractions.	32
31, 32, 34	demonstrate understanding of the relationship between fractions and decimals.	14
20, 22	demonstrate ability to complete a one-step solution number sentence.	58
23, 58, 60	demonstrate ability to complete a two-step solution number sentence.	27
37, 38, 62, 66	demonstrate an understanding of lines, angles, and triangles.	45
25, 26, 36	demonstrate ability to compare fractional and decimal values.	46
12, 15, 19, 27	demonstrate understanding of fractions interpreted as decimals.	23

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Mathematics Evaluation (cont'd.)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
33, 35, 63	demonstrate ability to round off or estimate numbers.	32
39, 40, 55	demonstrate ability to solve problems involving perimeter and circumference.	35
52, 53, 54	demonstrate ability to solve problems involving a combination of operations.	23
41, 57, 64	demonstrate ability to solve problems involving area and volume.	54
24	demonstrate ability to solve problems involving percent.	24
21, 50, 51	demonstrate ability to solve problems involving the average, linear measurement, and set elements.	41
42, 43, 61, 65	demonstrate ability to solve problems involving square numbers, probability, variables, and reciprocals.	53

Results from the California Achievement Test, Grade 12

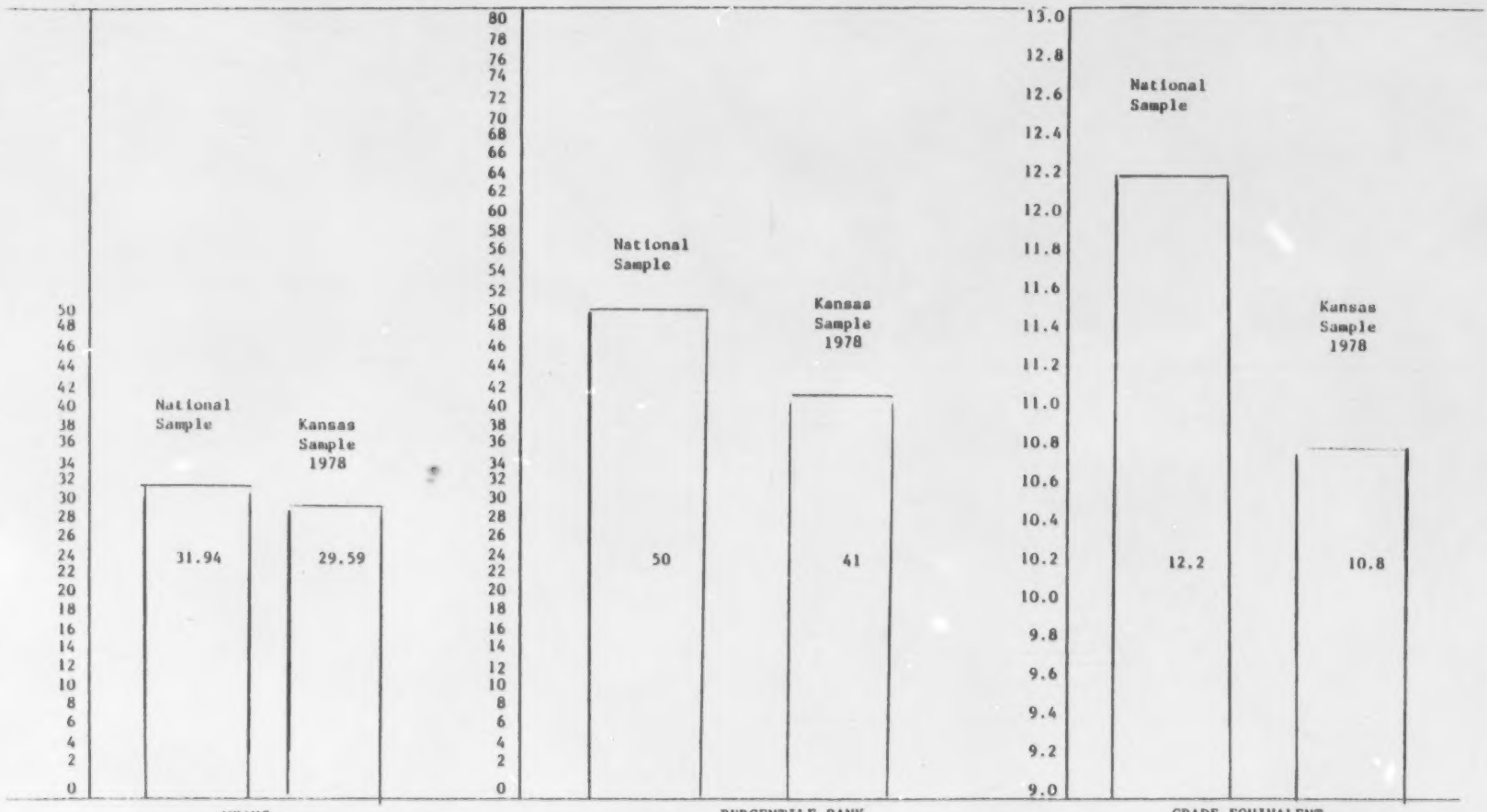
Math Concepts and Problems Subtest Results

Exhibit 19 presents the results of the twelfth grade's performance on the CAT math concepts and problems test. As the histogram indicates, the Kansas sample scored below the national sample by 2.35 points, the difference between the national mean of 31.94 and Kansas mean of 29.59. This score places Kansas at the 41st percentile with a grade equivalence of 10.8.

The item analysis of the objectives shows a mixed performance. For the 15 objectives listed, 11 for concepts, four for problems; the Kansas sample scored at or above 60-percent-correct in 6 instances, with two objectives having excellent performance outcomes. In two other instances students scored in the 20 percent correct range demonstrating weak performance.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 19



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GRADE 12

TEST Comparative Data for CAT

SUBTEST Math Concepts and Problems

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test CAT: Math Concepts

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will demonstrate knowledge of:	
1, 11, 16	signs.	85
2, 4, 27, 32	equivalents, sentence numbers, inequalities.	68
3	factors.	77
5, 8, 23, 29, 31	measurements, dollars, Roman numerals.	54
6, 9, 10, 19, 20, 22, 24, 26, 28, 30	algebra, powers.	60
7, 14, 34	decimals.	42
12, 15	geometry.	56
13, 17, 18	sets.	57
25	reducing.	65
33	irrational numbers.	25
35	graphs.	22

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test CAT Math Problems

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will demonstrate knowledge of:	
1, 2, 3, 5, 6, 8	measurements.	72
4, 7, 9, 10, 11, 14, 15	percents.	52
12	decimals.	58
13	averaging.	38

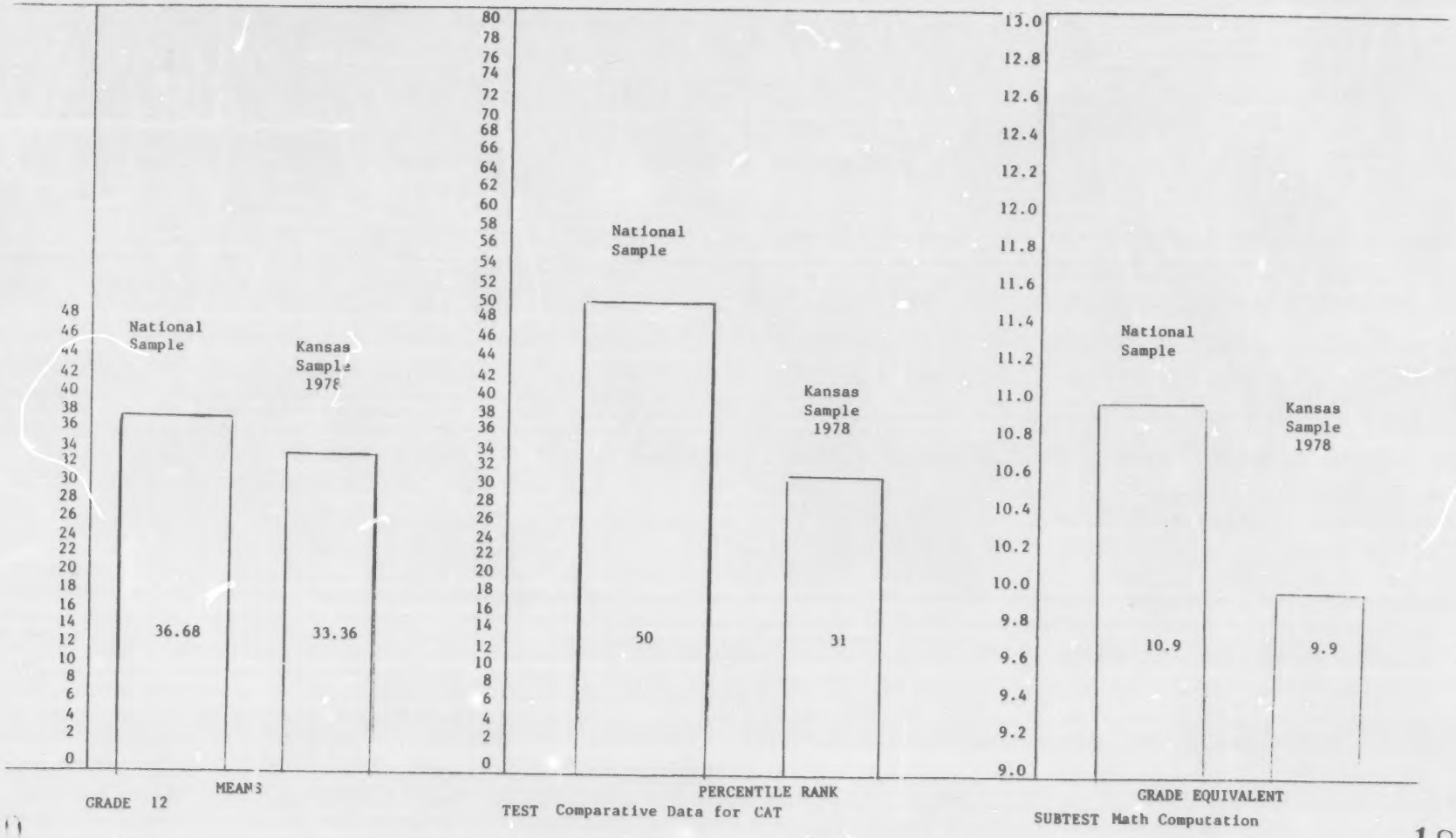
CAT Math Computation Subtest Results - Grade 12

Exhibit 20 shows that the Kansas sample scored 3.32 points below the national sample. The national sample scored a mean of 36.68 while the Kansas sample scored 33.36. The Kansas results placed the twelfth grade students at the 31st percentile with a grade equivalence of only 9.9.

The item analysis of the sample's performance on the objectives shows that in all instances the students scored average to high, reflecting the difficulty level of the test.

The Kansas Learner Needs Assessment Study
State Report
Histogram

Exhibit 20



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The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test CAT Math Computation

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will demonstrate ability to:	
1, 2, 3, 4, 5, 6, 7, 8, 25 26, 27, 28, 29, 30, 31, 32	add, subtract, multiply, divide whole #'s.	82.6
9, 10, 11, 12, 13, 14, 15, 16	add, subtract fractions.	70
33, 34, 35, 36, 37, 38, 39, 40, 41, 45	multiply, divide fractions.	55
	The student will demonstrate knowledge of:	
17, 18, 19, 21, 22, 23, 42, 43, 46, 47	decimals & percents.	69
20, 24, 44, 48	measurement and time.	51.5

Mathematics Evaluation Results - Grade 12

The twelfth grade sample scored relatively high on the Mathematics Evaluation Test. Of the 62 items contained on the test, the mean or average score was 35.86, meaning that the majority of students answered more than half the questions correct. The complete set of results for this test is as follows:

No. Items	Possible Right	Mean	S.D.	Range
62	62	35.86	9.79	11-56

An analysis of the learning objectives reveals that of the 12 objectives listed, the sample scored relatively high on 6, in the middle range on 5, and poorly on one.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Mathematics Evaluation

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
1, 2, 8, 27, 34, 36, 48, 52	demonstrate ability to solve addition, subtraction, multiplication, and division problems involving whole numbers.	80.25
3, 37,38	demonstrate ability to solve addition and subraction problems involving fractions.	75.67
2, 46	demonstrate ability to solve multiplication and division problems involving fractions.	79
5, 26, 33, 35, 45	demonstrate ability to solve problems involving decimals and percent.	72
6, 7, 11, 12, 14	demonstrate ability to solve problems involving measurement in feet, yards, miles, kilometers, and time.	52.2
10, 49	demonstrate ability to solve problems involving square root and powers of numbers.	44.5
13, 22, 51	demonstrate understanding of irrational numbers, prime numbers, and integers.	49.33
21, 24, 31, 54	demonstrate an ability to solve problems involving fractional operations and ratio.	73
17, 23, 42	demonstrate an understanding of the average and the median.	51.67
25, 29, 30	demonstrate an understanding of equivalents and rounding off.	62.67
15, 41	demonstrate understanding of place value and of bases other than ten.	25.5
18, 28, 32	demonstrate ability to solve problems involving one unknown.	71

Summary Sheet for:
Mathematics Results
Grade 6 & 12

Test	Number Items	National Mean	Kansas Mean	National S.D.	Kansas S.D.	Kansas %ile Rank	Kansas Grade Equivalent
Grade 6							
Math Evaluation			27.9		10.04		
ITBS:							
Math Concepts		22.5	24.14		3.96	60	7.0
Math Problem Solving		14.5	14.86		6.23	54	6.7
Grade 12							
Math Evaluation			35.86		9.79		
CAT:							
Math Computation		36.68	33.36	9.27	9.76	31	9.9
Math Concepts & Problems		31.94	29.59	10.50	-	41	10.8

IV. SCIENCE AND SOCIAL SCIENCES

Chapter IV

Science and Social Science

Introduction

Testing in the Science and Social Science areas delineated by the Statewide Goals for Education in Kansas was carried out in 1975, 1976, and 1977, during which time approximately 5,300 students underwent testing in five content areas. These areas included science, American history, ecology, values and citizenship, grade 6 only; and consumer competencies, grade 12 only. As with reading and mathematics, each of the content areas was given specificity by the development of student learning objectives. In all, the student sample was tested against some 108 learner objectives covering the five content areas.

Selection of Test Instruments

Following a review of the literature, five standardized tests were selected for use in this study. These included, New Mexico Concepts of Ecology Test, Levels 1 and 2, grades 6 and 12; Hollingsworth-Sanders Intermediate History Test, grade 6; Emporia American History Test, grade 12; Emporia General Science Test, grade 12, the Test of Consumer Competencies, grade 12. At the sixth-grade level two instruments were specifically developed for use in this study. These were Science Evaluation and Values and Citizenship Evaluation.

The testing was carried out in April of each year according to the following test administration schedule:

Science Evaluation, Grades 6 and 12, 1975

American History, Grades 6 and 12, 1976

Values and Citizenship, Grade 6 only, 1976

Ecology, Grade 6 and 12, 1978

Consumer Competencies, Grade 12 only, 1978

Description of Instruments

Grade 6

New Mexico Concepts of Ecology Test, Level 1. This standardized test contains 20 multiple-choice items. These items concern knowledge in such areas as the food chain; functions of various elements; processes such as adaptation, respiration, photosynthesis, pollution, and corrosion; relationships between plants and animal systems.

Hollingsworth-Sanders Intermediate History Test. This 55 item test was produced in Emporia, Kansas. Using the multiple-choice format, it tests knowledge of famous historical persons, locations, treaties, quotations, purchases, political processes and events.

Values and Citizenship Evaluation. This 65 item test was locally developed for use in the Kansas Learner Needs Assessment Study. With a multiple-choice format it contains questions about such topics as effects of environment; political systems, and values; human needs; responsibilities of government agencies and private citizens; and facts about American cities, taxes, laws, political figures, states, and agencies.

Science Evaluation. This test was produced for specific use in this study. With 63 multiple-choice items it contains questions about chemical changes; astronomy; simple machines, animal habitats, plant habitats, processes such as evaporation and photosynthesis, sound, light, reading a table or chart, and parts of matter.

Grade 12

Test of Consumer Competencies. This standardized test contains 55 items. Using a multiple-choice format it contains questions about such topics as sources of consumer information, types of payment programs, charge accounts, insurance, interest rates, taxes, economic trends and factors, housing and rental information.

New Mexico Concepts of Ecology Test, Level 2. This standardized test contains 20 multiple-choice items. These items concern knowledge in such areas as the food chain; functions of various elements; processes such as adaptation, respiration, photosynthesis, pollution, and corrosion; relationships between plants and animal systems.

Emporia American History Test. This 135 item test in a multiple-choice format tests knowledge of such topics as economic growth; inventors and famous figures in industry, politics, and war; key acts; political methods; and political issues of the time.

Emporia General Science Tests. This test is a standardized test produced in Emporia, Kansas. It contains 95 items, all employing a multiple-choice style. The questions concern such basic science topics as plants and photosynthesis, energy, simple machines, pressure and weight, sound, light, and mechanics of the eye and ear.

Results

The results are reported in three forms. Where the test is standardized, the Kansas means and percentile ranks are presented for each test in the form of histograms. These histograms also contain a comparison of the state's sample performance with that of the national norm group. Following the histograms are the list of objectives or skills areas measured by the test, along with the item analysis or percent-of-correct responses for the Kansas samples.

The results reported for the standardized tests differ from those reported for reading and mathematics in one case only. No grade equivalent comparison scores are available for tests used to measure the sciences and social sciences.

In the case of the New Mexico Ecology Test, for grade six and twelve, only mean comparisons are available for the Kansas and national norm sample groups.

In the case of the Science Evaluation, grade 6, and the Values and Citizenship tests, grade 6 (both of which were specially constructed for use in this study) the results are presented in means and standard deviations, as well as item analysis of the objectives.

Summary sheets containing all the information presented in the histograms can be found at the end of this section.

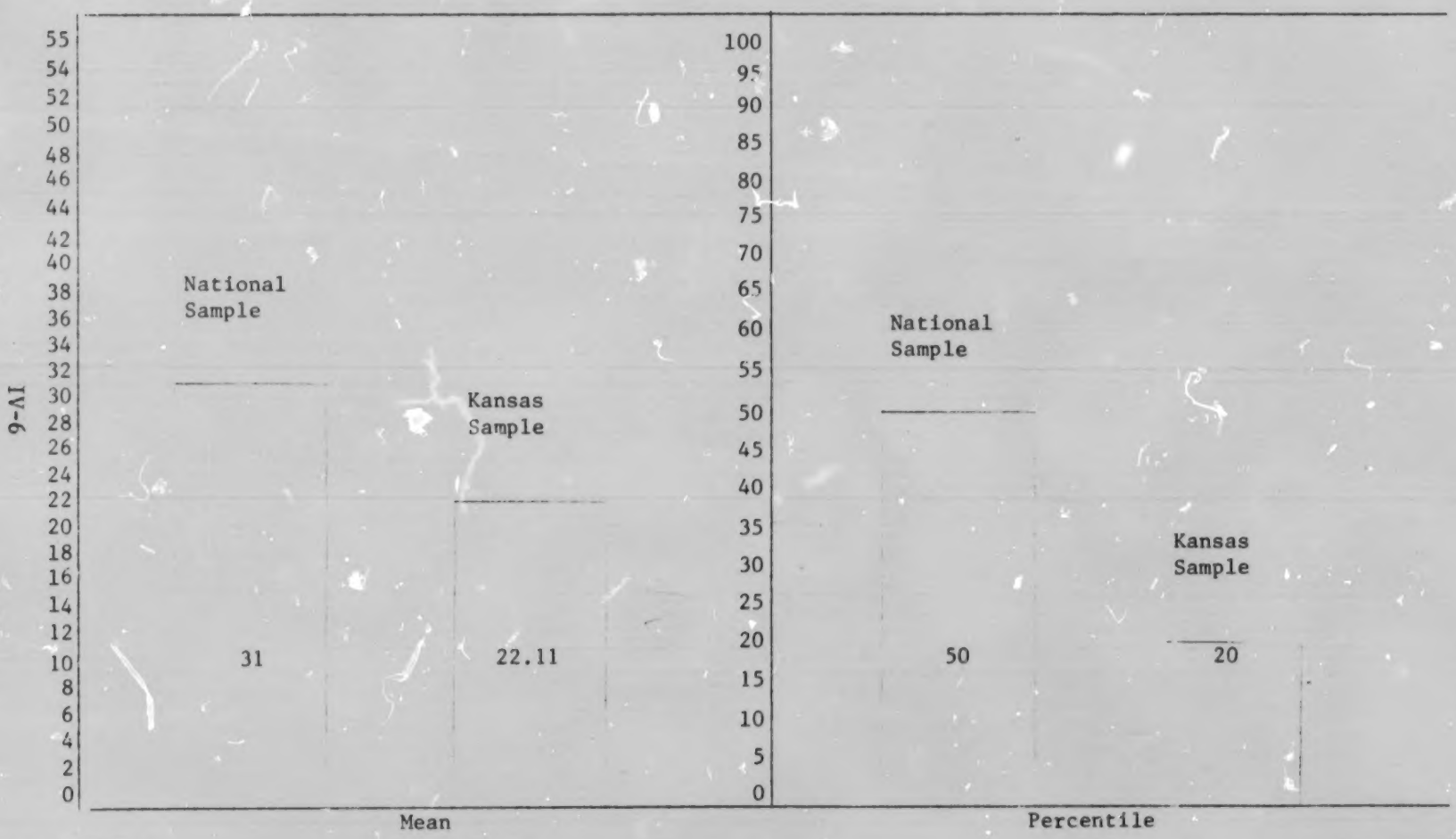
Grade 6 Results

Hollingsworth-Sanders Intermediate History Test--Grade 6

A look at the results of this test shows that the Kansas sample scored below the national sample by 8.89 points. Of the 55 questions contained in this test the national norm group scored a mean of 31, while the Kansas sample scored a mean of 22.11. This score placed the Kansas sample in the 20th percentile nationally.

A look at the item analysis of the objectives reveals that of the eleven objectives listed, the Kansas sample scored at or above the fifty percent correct level in only one instance. On three objectives the sample scored below the forty percent correct level with the weakest performance being demonstrated by a 23.5 percent correct total. This score related to an understanding of the colonial and revolutionary war periods.

Kansas Learner Needs Assessment Study
State Report
Histograms



Grade 6 Test American History

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test American History

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
4, 5	demonstrate an understanding of the colonial and revolutionary war periods.	23.5
12, 26	demonstrate an understanding of the conflict of 1812.	58
21, 24, 31	demonstrate an understanding of the U.S.'s Westward Expansion.	45
22, 25, 27, 32, 33	demonstrate an understanding of the conflicts in the southwest.	40.4
8, 9, 15, 16, 17, 36	demonstrate an understanding of the sectionalism and/or events or conditions leading to the Civil War.	33.8
18, 19, 20, 39, 40, 41	demonstrate an understanding of the Civil War.	45
7, 43, 44, 46	demonstrate an understanding of the role of science and invention in the nation's economy and standard of living.	40.5
6, 14, 48	demonstrate an understanding of money and exchange.	43.6
23, 42, 52, 53, 54, 55	demonstrate an understanding of human and natural sciences.	39.3
1, 2, 3, 30	demonstrate an understanding of the acquisition of possessions by the United States.	46.2
10, 11, 45, 47, 49, 50, 51	demonstrate an understanding of transportation and communication.	47.1

Science Evaluation--Grade 6

Since this test was specially constructed for use in this study no comparative data is available. The results are presented in the following form:

No. Items	Possible Right	Mean	S.D.
63	63	31.26	10.29

These results can be interpreted as follows:

The number of items contained in the test represents the highest possible score a student can receive (63). The mean score represents the arithmetical average determined by adding all the scores and dividing by the number of scores. The standard deviation (10.29) is the measure of the spread of scores away from the mean, (31.26) in both a plus and minus direction. Approximately 68 percent of all students will fall between one standard deviation above and below the mean. In the case of the Science Evaluation Test, this means that 68 percent of the students who were tested scored between 20.97 and 41.55 out of a possible total score of 63.

The Item analysis gives definition to the samples strengths and weaknesses on this test. Of the 17 objectives measured the sample scored above the fifty percent correct level on nine objectives, with marked strength being shown on one. The sample scored below the fifty percent correct level on eight objectives. On five objectives the sample scored within the 30 percent correct range demonstrating weaknesses in those areas.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Science

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
7, 12, 27, 44, 56	demonstrate an understanding of the nature of science and the scientific method.	53
50, 51, 52, 53, 54	demonstrate an understanding of representing, recording, and interpreting data.	53
18, 26, 42	demonstrate an understanding of the classification of living things.	64
9, 14, 23, 38	demonstrate an understanding of plants.	51
3, 16, 20, 27	demonstrate an understanding of animals other than insects.	74
31, 39, 47	demonstrate an understanding of insects.	68
1, 30, 43	demonstrate an understanding of atoms and molecules.	51
19, 25, 35, 49, 57	demonstrate an understanding of the structure and composition of matter.	38
4, 55, 62	demonstrate an understanding of changing states of matter.	30
13, 17, 48, 60	demonstrate an understanding of machines, forces and the principles of motion.	57
5, 10, 33, 46	demonstrate an understanding of heat.	47
22, 58	demonstrate an understanding of electricity.	44

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Science (cont'd)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
15, 59, 63	demonstrate an understanding of light and sound.	30
2, 24, 29, 32	demonstrate an understanding of geological features & processes.	34
11, 36, 40	demonstrate an understanding of geological history of the earth.	35
21, 41, 45, 61	demonstrate an understanding of weather.	41
6, 8, 28, 34	demonstrate an understanding of the solar system.	60

New Mexico Concepts of Ecology Test--Grade 6

A histogram depicting the comparative performance of the national sample and Kansas sample is not presented here as comparative percentile rankings and other contrived scores are not available. Comparative data are available on the mean score performance levels of both groups.

At the national level the sample group scored a mean of 9.87, while the Kansas sample scored a mean of 10.9. Assuming that on standardized tests fifty percent of the national sample score at the national mean, this would indicate that the Kansas sample scored above the 50th percentile nationally.

The item analysis for this test shows the sixth-grade scoring above the fifty percent correct level on five of the seven objectives listed. On two objectives the sample scored at or below the forty percent correct total, with the lowest percent correct total being 37 on geographic evolution and conservation.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Ecology

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will understand the concepts of ecology from the smallest life systems to the expanse of the universe including:	
1, 8	natural Resources.	62
2, 3, 15	pollution.	64
4, 5, 10, 13, 20	plant/animal dependencies.	56
6, 12	life processes.	71
7, 18	natural balance.	40
9, 11, 16	geographic evolution and conservation.	37
14, 17, 19	natural adaptation.	51

Values and Citizenship Evaluation--Grade 6

As with the Science Evaluation this test was specially constructed for use in this study at the sixth-grade level. As such no comparative norm data is available.

The results of this test are as follows:

No. Items	Possible Right	Mean	S.D.
65	65	25.19	8.83

Of the 65 possible correct answers the Kansas sample averaged only 25.19 or 38.75 percent correct. The standard deviation of 8.83 indicates that approximately 68 percent of the sample scored between 16.36 and 34.02 on the test.

A look at the item analysis of the objectives shows average to weak performance on all fourteen objectives. The highest percent-correct total on an objective was 54.2, while the lowest was 22.7. The sample scored below the fifty percent correct level on ten of the 14 objectives.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Values and Citizenship

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
4, 23, 31, 34	demonstrate an understanding of the needs of people.	50.7
1, 35, 37, 50, 53	demonstrate an understanding of the development of societies.	26.8
5, 13, 33, 44	demonstrate an understanding of institutions.	34.7
38, 43, 54, 56	demonstrate an understanding of culture as a product of group experience.	28.5
12, 45, 52, 55, 59	demonstrate an understanding of values.	47
3, 6, 24	demonstrate an understanding of the past.	50
8, 9, 14, 18, 25, 29, 48, 49	demonstrate an understanding of government and political systems.	39.1
11, 15, 22, 47	demonstrate an understanding of the branches of the United States government.	22.7
2, 21, 28, 36, 39, 40, 46	demonstrate an understanding of economics.	50.5
7, 16, 30, 41, 51	demonstrate an understanding of the constitution of the United States.	35.8

Grade 6 Test Values and Citizenship (cont'd)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
19, 26, 32	demonstrate a knowledge of population.	24.3
60, 61, 63, 65	demonstrate knowledge of the Federal leaders of the United States.	54.2
10, 17, 27	demonstrate an understanding of the tax system.	43.3
57, 58, 62, 64	demonstrate knowledge of the State of Kansas.	29.5

Grade Twelve Results

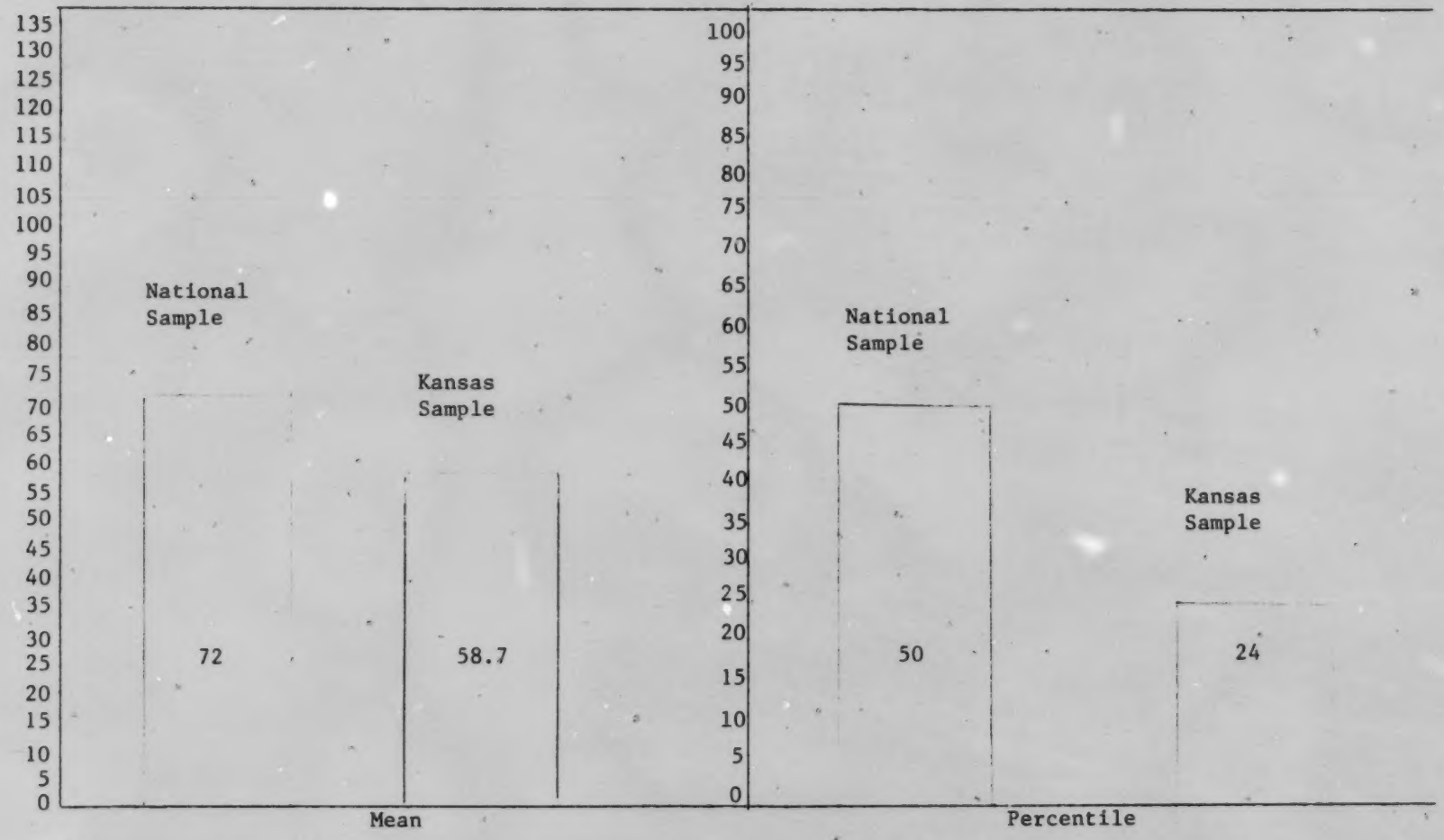
Emporia American History Test--Grade 12

The results of the Emporia American History Test are presented in histogram and analysis of objective forms.

The histogram shows the national samples scoring at a mean of 72 while the Kansas sample scored a mean of 58.7, a difference of 13.30 points. This placed the Kansas sample in the 24th percentile nationally.

A look at the item analysis of the objectives shows that of the fourteen objectives tested, the Kansas sample scored above the fifty percent correct level on only one objective: an understanding of the U.S.'s westward expansion. Their performance on that objective was significantly high 72.2. On the remaining objectives the sample scored in the forty percent-correct range on seven, and in the thirty percent correct range on six.

Kansas Learner Needs Assessment Study
State Report
Histograms



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Grade 12 Test American History

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test American History

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will demonstrate:	
11, 12, 13, 14, 15, 16, 48, 66, 67	understanding of transportation and communication.	47.4
1, 2, 3, 4, 5, 6, 39	understanding of the U.S.'s westward expansion.	72.2
26, 43, 56, 70, 72, 73, 74, 80	an understanding of economics & the U.S.'s economic system.	48.5
7, 28, 54, 75, 76, 77, 97, 103	the ability to synthesize previous knowledge in understanding the use of government power in the U.S.	44.8
8, 9, 10, 18, 19, 20, 29, 30, 31, 32, 78, 79, 81, 82, 83, 84	an understanding of the roles of industry, labor, production, & management in the nation's economy.	47.6
17, 21, 22, 23, 24, 25, 27, 35, 36, 37, 38, 47, 69, 85, 86, 87, 88, 89, 90, 91	an understanding of money & exchange.	43.1

Grade 12 Test American History (cont'd)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
40, 52, 96, 98, 99, 101, 102	an understanding of human rights & resources.	37.7
131, 132, 133, 134, 135	an understanding of World War I.	36.8
58, 59, 60, 62, 63, 64, 65, 100, 121, 125, 126, 127, 128, 129, 130	the ability to synthesize previous knowledge in understanding international affairs.	32.8
61, 116, 117, 118, 119, 120, 122, 123, 124	the ability to synthesize previous knowledge in understanding American holdings & acquisition of possessions.	39
108, 109, 110, 111, 112, 113, 114, 115	an understanding of the Spanish-American conflict.	43.6
33, 34, 92, 93, 94, 95	an understanding of agriculture & natural resources.	33.3

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test American History (cont'd)

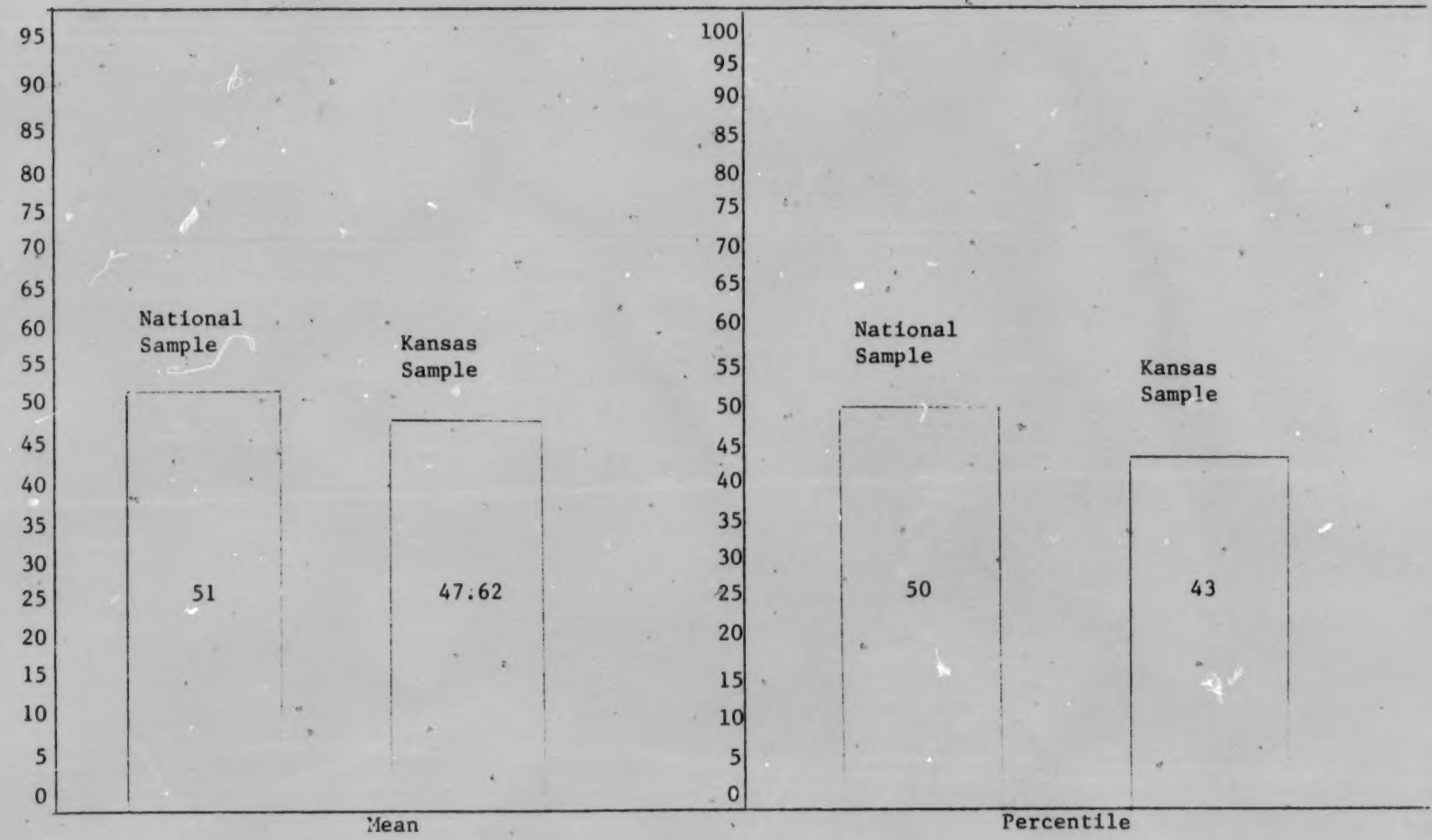
Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
41, 42, 44, 45, 71, 104, 105, 106, 107	an understanding of sociology & economics in education & the arts.	48.8
46, 49, 50, 51, 53, 55, 57	an understanding of the American political system.	33.1

Emporia Science Test--Grade 12

The results of this test, shown on the following histogram, show the national sample outscoring the Kansas sample by 3.38 points. The national sample scored a mean of 51 while the Kansas sample scored 47.62. This placed Kansas in the 43rd percentile nationally.

A review of the item analysis of the objectives shows a mixed performance on the 26 objectives tested, with a 13-13 divide, above and below the fifty percent-correct range. On those 13 objectives where the sample scored above the fifty percent correct total, the sample scored relatively high on five, with a very strong performance of 82 percent correct being shown on an understanding of genetics. Where the sample scored below the fifty percent correct total, significant weakness was shown on two of the objectives, 24.3 percent-correct on an understanding of work and efficiency; and 29 percent-correct on the principles of sound.

Kansas Learner Needs Assessment Study
State Report
Histograms



Grade 12 Test Science

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Science

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
5, 9, 91	demonstrate knowledge of plant parts & their functions.	35
1, 2, 3, 4	demonstrate on understanding that plants may or may not manufacture their own food.	48.5
8, 10	demonstrate an understanding of plant reproduction.	57.5
13, 14	demonstrate an understanding of plant genetics.	40
6, 7, 42, 78	demonstrate a knowledge of elementary agriculture.	57.5
92, 93, 90, 67	be able to identify the conditions necessary for existence of life.	54.5
79, 89	demonstrate an understanding of adaptation & balance in the animal world.	59
11, 77	demonstrate an understanding of genetics.	82
12, 15	be able to differentiate between an acquired trait & a genetic trait.	52.5
20, 26, 27	demonstrate an understanding of work & efficiency.	24.3
17, 18, 24	demonstrate an understanding of energy.	39.3
16, 19, 35, 38, 48, 88	be able to identify types & sources of energy.	56.3
30, 89	be able to demonstrate an understanding of the energy of heat.	39
21, 56, 66, 70, 95	demonstrate an understanding of measurement of work, weight, time & sound.	50
31, 32, 39, 84	demonstrate an understanding of engines.	62

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Science (cont'd)

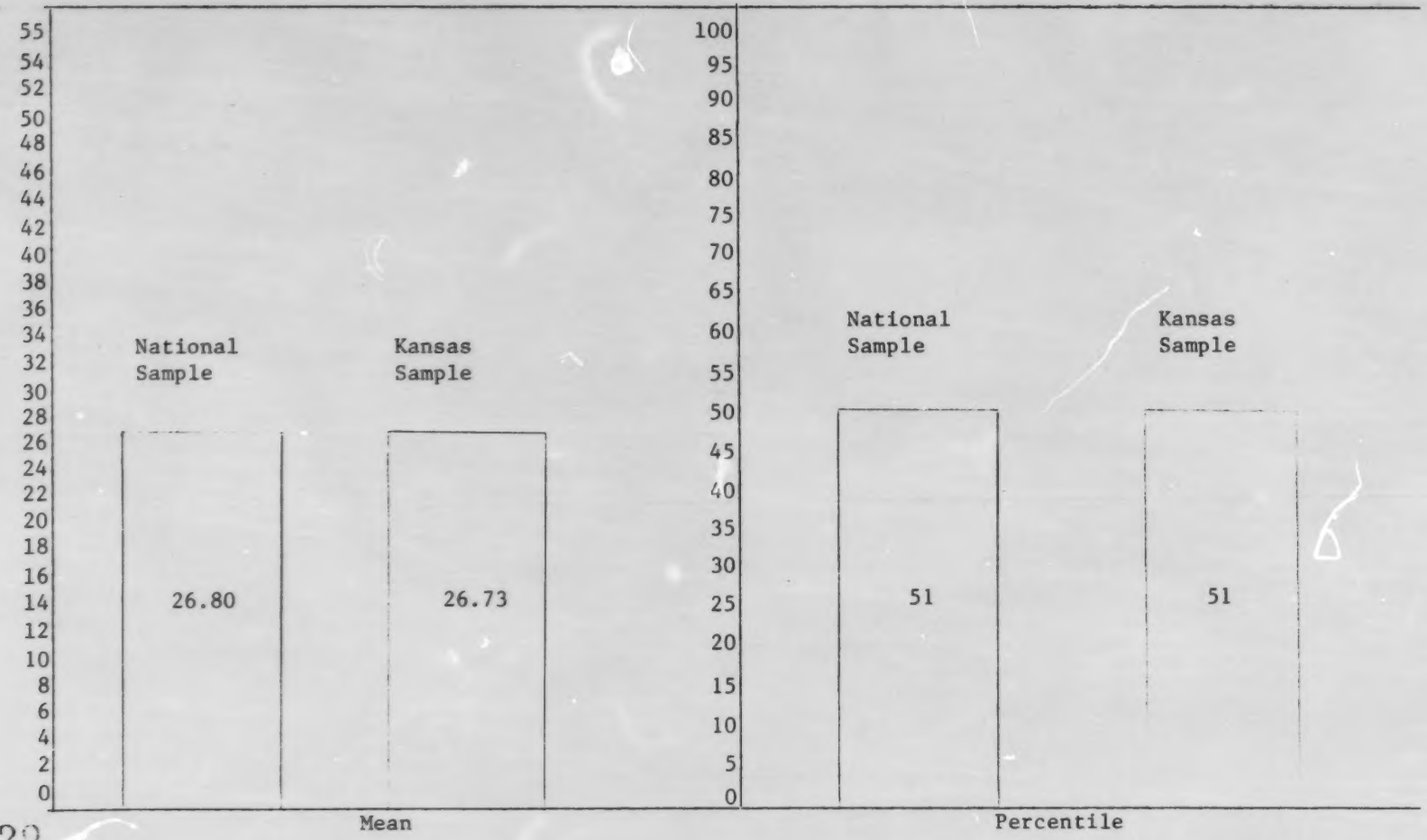
Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
22, 29, 46, 69, 83	demonstrate an understanding of principles of motion, resistance, & gravity.	44.2
33, 37, 40, 41, 43, 81, 63, 86	demonstrate an understanding of electricity.	62.75
44, 45	demonstrate an understanding of water displacement & pressure.	53
36, 82	demonstrate an understanding of the battery.	39
59, 60, 61, 85	demonstrate an understanding of the electromagnetic spectrum.	36.25
58, 72	demonstrate an understanding of how color reflects or absorbs light.	42
62, 64	demonstrate an understanding of how light & the parts of the eye interact to produce an image.	67
52, 55, 65	demonstrate an understanding of the principles of sound.	29
53, 54, 56, 57, 94	demonstrate an understanding of the general principles of sound.	47.6
73, 87	demonstrate an understanding of the states of matter.	69.5
34, 47, 71, 74, 75	demonstrate an understanding of the forms & structure of matter.	47.8

Test of Consumer Competencies--Grade 12

The results of the Test of Consumer Competencies shows no appreciable difference between the National and Kansas sample groups. The national sample scored a mean of 26.80, while the Kansas sample scored a mean of 26.73. These scores place both the National and Kansas samples at the 51st percentile.

The analysis of the objectives shows average performance on all but two of the fourteen objectives. The Kansas sample scored within the thirty percent-correct range on a consumer knowledge of housing and food.

Kansas Learner Needs Assessment Study
State Report
Histograms



Grade 12 Test Consumer Competencies

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Consumer Competencies

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will demonstrae consumer knowledge of:	
5, 9, 11, 16, 17	individual consumer in the marketplace.	52.8
14, 22, 23, 38	money management.	49.75
1, 12, 46, 49, 51	consumer credit.	51.6
31, 39, 42, 45	housing.	34.25
28, 47, 53	food.	32.33
13, 19, 36	transportation.	41
8, 25, 33	clothing	49.33
4, 21, 34, 54	health services, drugs, & cosmetics.	44
15, 24, 26	recreation.	57.66
6, 40, 43	furnishings & appliances.	49
2, 7, 18, 35, 48	insurance.	56.2
20, 32, 37, 44	savings & investments.	47.75
27, 29, 30, 50	taxes.	47
3, 10, 41, 52, 55	consumer in society.	53.2

New Mexico Concepts of Ecology Test--Grade 12

A histogram depicting the comparative performance of the national sample and Kansas samples is not presented here as comparative percentile rankings are not available. Comparative data are available on the mean score performance levels of both groups.

The Kansas sample outscored the national sample by .43 points, with the Kansas sample scoring a mean of 12.96 and the national sample scoring a mean of 12.53.

The item analysis of the objectives shows that the Kansas sample scored well on all of the five objectives tested.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Ecology

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will understand the concepts of ecology from the smallest life systems to the expanse of the universe including:	
1, 7, 8, 12, 14, 19	life processes.	67
2, 5, 15, 18	plant/animal dependencies.	70
3, 6, 11, 13, 16, 20	geographic evolution & conservation.	60
4, 9	soil conservation	54
10, 17	natural adaptation	68

Summary

In the area of Ecology, both the sixth- and twelfth-grade Kansas samples scored slightly higher than the national mean. In the area of History, the sixth- and twelfth-grade Kansas samples scored somewhat lower than the national norm group. On the Science test, the sixth grade obtained high percentages-correct on three learning objectives: classification of living things, the understanding of insects and other animals, and the solar system. They obtained low percentages-correct on five learning objectives dealing with: understanding of the structure and composition of matter, the changing states of matter, light and sound, geological features and processes, and geological history of the earth. The Science performance of the twelfth-grade Kansas sample was comparable to that of the norm groups.

The sixth-grade Values and Citizenship performance as analyzed for each learning objective indicated low performance on objectives concerning development of societies, branches of the U.S. government, and understanding of population. The performance on the remaining eleven objectives was adequate.

On the Consumer Competencies Test, the twelfth grade performance was comparable to that of the national norm group.

Kansas Learner Needs Assessment Study
State Report
Summary Sheet for:
Science and Social Sciences
Grade 6 & 12

Test	Number Items	National Mean	Kansas Mean	National S.D.	Kansas S.D.	Number of Students	Source of Test
Grade 6							
New Mex Level 1	20	9.87	10.9	3.41	3.13	716	Standardized
Hollgs-History	55	31	22.11	-	7.3	986	Standardized
Values and Cit	65	-	25.19	-	8.83	994	Locally pro
Sci Evaluation	6.3	-	31.26	-	10.29	441	Locally pro
Grade 12							
Test of Consumer Comp	55	26.80	26.73	7.128	6.28	539	Standardized
New Mex Concepts Ecology Level 2	20	12.53	12.96	3.82	3.33	525	Standardized
Emporia History	135	72	58.7	-	17.0	532	Standardized
Emporia Sci	95	51	47.62	-	13.33	534	Standardized

V. LIFE SCIENCES

Chapter V.

Life Sciences

Introduction

Testing in the Life Science area, delineated by the State-wide Goals for Education in Kansas, was carried out in 1976 and 1978, during which time approximately 2200 sixth- and twelfth- grade students underwent testing in six content areas. These areas included health, physical education, career education, nutrition, safety, and self-image. With the exception of the state-wide goal for self-image, each of the other content areas was given specificity by the development of student learner objectives. In all, the student sample was tested against some 71 learner objectives covering the five content areas.

Selection of Test Instruments

Following a review of the literature, six standardized test instruments were selected for use in this study. These included AAHPER Cooperative Health Test, grade 6; AAHPER Cooperative Physical Education Test, Forms 4A and 2A, grades 6 and 12; Career Education Needs Assessment, grades 6 and 12; Tennessee Self Concept Scale, grades 6 and 12.

Four tests were specially constructed for use in this study. At the sixth-grade level these included Nutrition Evaluation and Safety Evaluation. At the twelfth-grade level were Health and Safety Evaluation and Nutrition Evaluation.

The testing was carried out in April of each year. All of the content areas appearing in this chapter, with the exception of Self-Image, were tested in 1976. The administration of the Tennessee Self Concept Scale was carried out in 1978.

Description of Instruments

Grade 6:

AAHPER Cooperative Health Education Test. This standardized test contains 50 items. Using multiple-choice, it contains questions about such topics as causes of disease; healthy social behavior; use of drugs and medications; symptoms of diseases; diet; and effects of smoking.

AAHPER Cooperative Physical Education Test, From 4A. This standardized test contains 60 multiple-choice items. It samples knowledge in such areas as posture, sportsmanship, effects of exercise on the body, methods and techniques of various physical skills such as throwing, running, balancing, catching, lifting, and jumping.

Career Education Needs Assessment. This standardized test contains 45 items. Thirty of these are multiple-choice and 15 use a Likert-scale format, with a statement followed by an answer-choice ranging from Agree to Disagree to Don't Know. The mulitple-choice questions sample knowledge in such areas as duties and surroundings of various occupations, educational requirements and training for various careers.

Nutrition Evaluation. This 55 item test was locally-produced. With multiple-choice questions it samples the student's knowledge in such areas as vitamins, their uses and sources; minerals, their uses and sources; the digestive process; prevention, symptoms, and diseases of malnutrition; and body weight.

Safety Evaluation. This locally-produced test contains 50 multiple-choice items. These items test such knowledge areas as label information, drugs, first aid, traffic signs, traffic safety, game practices, and common accident conditions.

Grade 12

AAHPER Cooperative Physical Education Test, Form 2A. This standardized test contains 60 multiple-choice items. It samples knowledge in such areas as posture, sportsmanship, effects of exercise on the body, methods and techniques of various physical skills such as throwing, running, balancing, catching, lifting, and jumping.

Career Education Needs Assessment. This standardized test contains 25 items. Fifteen have a multiple-choice format. On ten other items, the student's personal experience with certain jobs and skills is measured through a Likert-scale format with three answer choices of No Experience, Some Experience, and Considerable Experience. The 15 multiple-choice items sample knowledge in such areas as duties and surroundings of various occupations, and skills and knowledge requirements of various occupations.

Health and Safety Evaluation. This 66 item test was produced for the Kansas Learner Needs Assessment Study. It samples knowledge in such areas as internal body parts and functions, temperature and respiration rates, effects of caffeine, smoking, alchohol, and other drugs, dental care, venereal disease, and first aid.

Nutrition Evaluation. This locally-produced test contains 60 items. Using multiple-choices it contains questions about such areas as vitamins, their uses and sources; nutritional needs of children, teens, and adults; minerals, their uses, and sources; the four food groups, their uses and sources; prevention, symptoms, and diseases of malnutrition; body weight; calories; carbohydrates; and starches.

The Tennessee Self-Concept Scale--Grades 6 and 12

This Scale consists of 100 self-descriptive statements which the student uses to portray his/her own picture of himself/herself. There are eleven separ-

ate scales within the total test, each with a score of its own. These subscales are:

Self-Criticism Score--Composed of 10 items, these are all mildly derogatory statements that most people readily admit as being true for them.

Total Positive Score--This scale reflects overall self-esteem, with high scores indicating a feeling of value and confidence, low scores indicating the opposite.

Row 1, Identity--Here the individual describes basic identity, how one sees oneself.

Row 2, Self-Satisfaction--This score reflects the level of self-satisfaction or self-acceptance.

Row 3, Behavior--This measures the person's perception of his/her own behavior or the way he/she functions.

Column A, Physical Self--Here the individual presents their view of their body, state of health, physical appearance, skills, and sexuality.

Column B, Moral-Ethical Self--This score describes the self from a moral-ethical frame of reference; moral worth, relationship to God, feelings of being a "good" or "bad" person, and satisfaction with one's religion or lack of it.

Column C, Personal Self--This score reflects the individual's sense of personal worth, feeling of adequacy as a person and evaluation of one's personality apart from body or relationships to others.

Column D, Family Self--This reflects the individual's perception of self in reference to his/her closest and most immediate circle of associates.

Column E, Social Self--This score refers to the person's sense of adequacy and worth in social interaction with other people in general.

Distribution Score--This is a summary score of the way one distributes answers across the five available Likert-scale choices in responding to all the items of the test. It is also a measure of another aspect of self-perception--certainty about the way one sees oneself. High scores indicate that one is very definite and certain in what one says about oneself while low scores mean just the opposite. Extreme scores on this variable are undesirable in either direction.

Results

The results are reported in three forms. Where the test is standardized, the Kansas means and percentile ranks are presented for each test in the form of histograms. These histograms also contain a comparison of the state's sample performance with that of the national norm group. Following the histograms are the list of objectives or skills areas measured by the test along with the item analysis or percent-of-correct responses for the Kansas sample.

Where the tests were specially constructed for use in this study the results are presented in means and standard deviations, as well as item analysis of the objectives.

Because no objectives were developed for the area of self-image, the results of the Tennessee Self-Concept Scale are reported separately, with means and standard deviations for the Kansas sample and national sample for each of the eleven subtests described in the preceding section.

With the exception of the Tennessee Self-Concept Scale the results of the grade 6 performance will be presented first, followed by that of grade 12. The grade 6 and grade 12 performance on the Tennessee Self-Concept Scale will be reported jointly at the conclusion of this chapter.

Following this section summary sheets containing all the information on the histograms are presented.

Grade 6 Results

AAHPER Cooperative Health Test--Grade 6

This histogram, depicting comparative performance data for the national and Kansas samples on this test, shows the national sample outscoring the Kansas sample by 1.30 points. The national sample scored a mean of 39.1 as compared to the Kansas mean of 37.8. This placed Kansas in the 44th percentile nationally.

An analysis of the learner objectives reveals that the Kansas sample did significantly well on all of the ten objectives measured. The lowest percent-correct total was 64.3.

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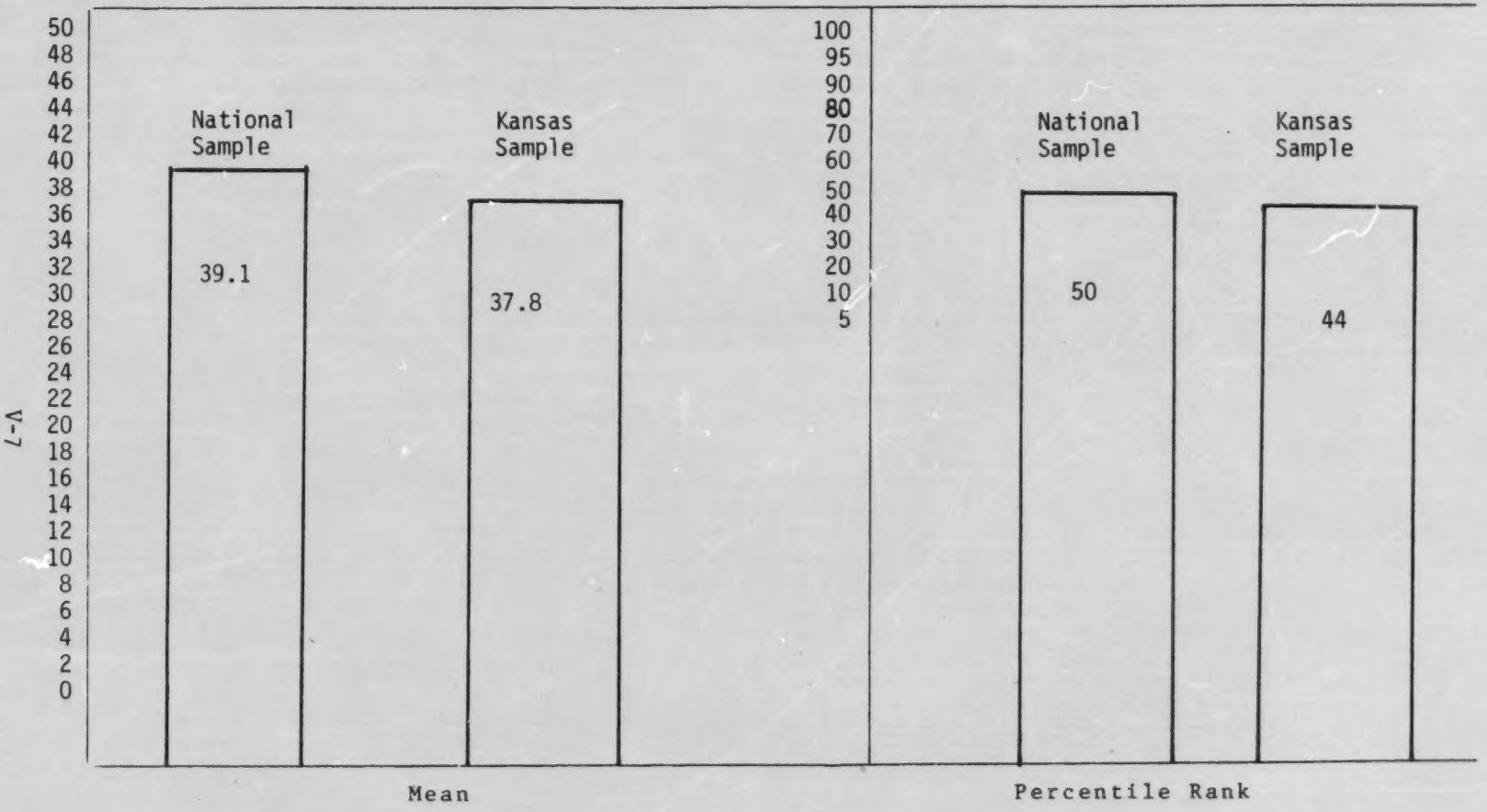
Kansas Learner Needs Assessment Study
State Report
Histograms



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Grade 6

Test: AAHPER Cooperative Health Test

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Health

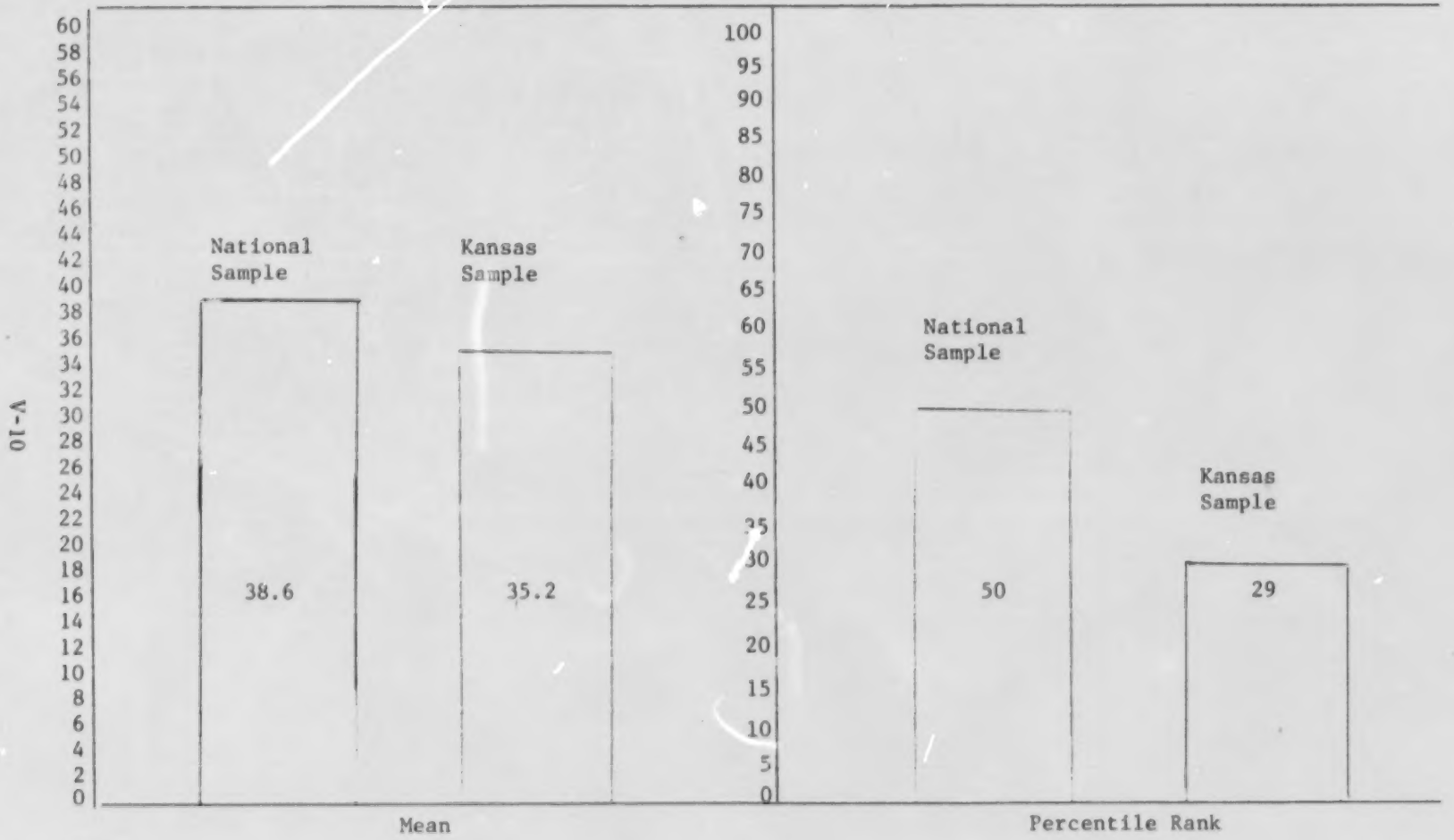
Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
12, 13, 26, 37	demonstrate an understanding of consumer health.	80.5
2, 34, 35, 36, 45, 48	demonstrate an understanding of community and community health practices.	67.5
25, 43, 44	demonstrate an understanding of international health.	64.3
23, 25, 42, 46	demonstrate a knowledge of disease and disorders.	67
10, 11, 19, 21, 22, 32, 33, 41	demonstrate an understanding of personal health care.	75.8
5, 20, 30, 31, 40	demonstrate an understanding of growth and development.	80.7
3, 4, 7, 14, 28	demonstrate an understanding of mental health.	85.1
1, 15, 16, 17, 18, 27, 38, 49	demonstrate a knowledge of drug use and abuse.	79.6
6	demonstrate a knowledge of safety and first aid.	89.2
8, 9, 29, 39, 47, 50	demonstrate an understanding of nutrition.	70.6

AAHPER Cooperative Physical Education Test--Grade 6

The results of this test again show the Kansas sample scoring below the national sample. The national sample scored a mean of 38.6, while the Kansas sample scored a mean of 35.2. This difference placed Kansas in the 29th percentile nationally.

However a review of the item analysis reveals no weaknesses. Of the seven objectives tested, the Kansas sample failed to score at the fifty percent-correct total in only one instance, and in that instance the sample scored at the 47.6 percent-correct total.

Kansas Learner Needs Assessment Study
State Report
Histograms



Grade 6 Test Physical Education

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Physical Education

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
4, 9, 25, 26, 36, 38, 39, 40, 55, 60	demonstrate an understanding of basic sports skills.	51.3
7, 16, 27, 29, 30, 41, 42, 48, 50, 54, 57, 58	demonstrate an understanding of movement skills in strategy and activities patterns.	50.4
31, 46, 47, 56	demonstrate a knowledge of body mechanics, rules, and procedures, and protective requirements.	47.6
8, 10, 12, 17, 24, 32, 33, 37, 43, 44, 45, 59	demonstrate an understanding of the immediate effects of activity.	60.9
1, 2, 3, 5, 18, 19, 28, 34, 49, 51, 52, 53	demonstrate an understanding of long term health and appearance.	62
20, 21	demonstrate an understanding of capacity for effort in physical activities.	67.5
6, 11, 13, 14, 15, 22, 23, 35	demonstrate an understanding of activity participation and effects of participation.	75.7

Career Education Needs Assessment--Grade 6

Although a standardized test, no comparative data are available to show the Kansas sample's performance relationship to that of the national norm group. The results are therefore reported similarly to that for non-standardized tests.

No. Items	Possible Right	Mean	S.D.
46	46	21.96	5.35.

Although the Kansas sample averaged only 21.96, the item analysis of the objectives shows no marked weaknesses. Of the three objectives tested the sample group scored well within the average range.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Career Education

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
1-20	demonstrate an understanding and knowledge of the nature of various careers.	53.6
21-35	demonstrate an awareness of the personal effects of career decisions.	42.6
36-45	demonstrate a knowledge of career preparation.	48.3

Nutrition Evaluation--Grade 6

Because this test was specially constructed no comparative norm data are available. A look at the performance of the Kansas sample on this test shows the following;

No. Items	Possible Right	Mean	S.D.
55	55	23.9	7.2

A review of the objectives shows that of the eight objectives listed the sample scored at or above the fifty percent-correct range on only two objectives, on three objectives they scored within the thirty percent-correct range and on one objective scored a low 22.3 percent-correct total.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Nutrition

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
1, 7, 19, 23, 29, 44, 54	demonstrate knowledge of nutrients and their uses.	44.4
9, 11, 13, 15, 16, 17, 20, 21, 28, 31, 40, 43, 45, 50, 53	demonstrate a knowledge of the nutrient content of foods.	54.6
2, 5, 14, 22, 33, 38, 42, 47, 49	demonstrate a knowledge of the sources and uses of essential vitamins.	33.1
6, 34, 41, 46	demonstrate a knowledge of sources and uses of essential minerals.	22.3
8, 10, 26, 3[illegible], 37	demonstrate an understanding of the effects of poor nutrition.	39.4
3, 32, 36, 51, 52, 55	demonstrate an understanding of the growth and weight patterns of people.	38.4
4, 18, 24, 27, 35	demonstrate an understanding of the Basic-4 Food Groups and balanced meals.	47
12, 25, 39, 48	demonstrate an understanding of the digestion of foods.	50.9

Safety Evaluation--Grade 6

The Safety Evaluation test is a 50 item test specially constructed for use in this study. As such no comparative norm data are available. A look at the results shows the Kansas sample performing at the following level:

No. Items	Possible Right	Mean	S.D.
50	50	23.9	6.7

A review of the item analysis of the objectives shows a mixed performance. Of the eleven objectives measured, the sample scored above the fifty percent-correct range on four, within the forty percent correct range on three, the thirty percent-correct range on three, and within the twenty percent-correct range on one.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Safety

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
2, 5, 9, 24, 25, 28, 29, 31	demonstrate an understanding of general personal safety practices.	48.6
8, 10, 36, 39	demonstrate an understanding of sports safety.	36.2
1, 3	demonstrate an understanding of accidents.	56
6, 16, 19, 20, 21, 22, 23, 30, 33	demonstrate an understanding of traffic signs.	68.2
7, 17, 26, 27, 35, 37, 38, 40	demonstrate a knowledge of first aid practices.	33.2
4, 15	demonstrate a knowledge of drugs and their effects.	37.6
11, 18, 32, 34	demonstrate a knowledge of disaster safety practices.	64.5
12, 13, 14	demonstrate a knowledge of school bus safety.	49.3
44, 45, 46	demonstrate a knowledge of traffic safety.	28.1
41, 42, 43	demonstrate a knowledge of bicycle safety.	42.2
47, 48, 49, 50	demonstrate a knowledge of traffic hand signals.	54.7

Grade Twelve Results

Health and Safety Evaluation--Grade 12

Unlike the separate sixth-grade measurements in health and safety, a single evaluation instrument was constructed to jointly measure health and safety at the twelfth-grade level. Again because the test was specially developed for use in this study no comparative norm data are available.

The results of the twelfth grade's performance on this test are as follows:

No. Items	Possible Right	Mean	S.D.
66	66	31.6	7.6

These results show that out of a possible high score of 66, the average or mean score was 31.6. The standard deviation indicates that approximately 68 percent of the students scored between 24.0 and 39.2 on this test.

The item analysis of the objectives shows that of the 15 objectives measured the sample population showed marginally weak performance on three. These releated to knowledge of the digestive system, sense organs, and nature and effects of hallucinogens.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Health and Safety Evaluation

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
1, 2, 15, 21, 26, 28	demonstrate a knowledge of the circulatory system.	53.5
4, 7, 9, 18, 22	demonstrate a knowledge of the skeletal and muscular systems.	43.6
5, 13, 14	demonstrate a knowledge of the endocrine system.	48
6, 23	demonstrate a knowledge of the respiratory systems.	51.5
10, 20, 33	demonstrate a knowledge of the digestive system.	33.3
11, 12	demonstrate a knowledge of the nervous system.	53.5
16, 19, 32	demonstrate a knowledge of the urinary and reproductive system.	47
17, 24, 25	demonstrate a knowledge of the sense organs.	34.33
29, 30, 31, 39	demonstrate a knowledge of major health problems.	65
36, 38, 40, 49	demonstrate a knowledge of the nature and effects of depressants.	50.5
34, 35, 37	demonstrate a knowledge of the nature and effects of stimulants.	41.67
46, 47, 50	demonstrate a knowledge of the nature and effects of hallucinogens.	39
41, 42, 43, 44, 45, 48, 51	demonstrate a knowledge of habit forming and addictive drugs.	43.86
52, 53, 54, 55, 56, 57, 58, 59, 60	demonstrate a knowledge of the spread and effects of venereal disease.	45.78

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Health and Safety Evaluation (cont'd.)

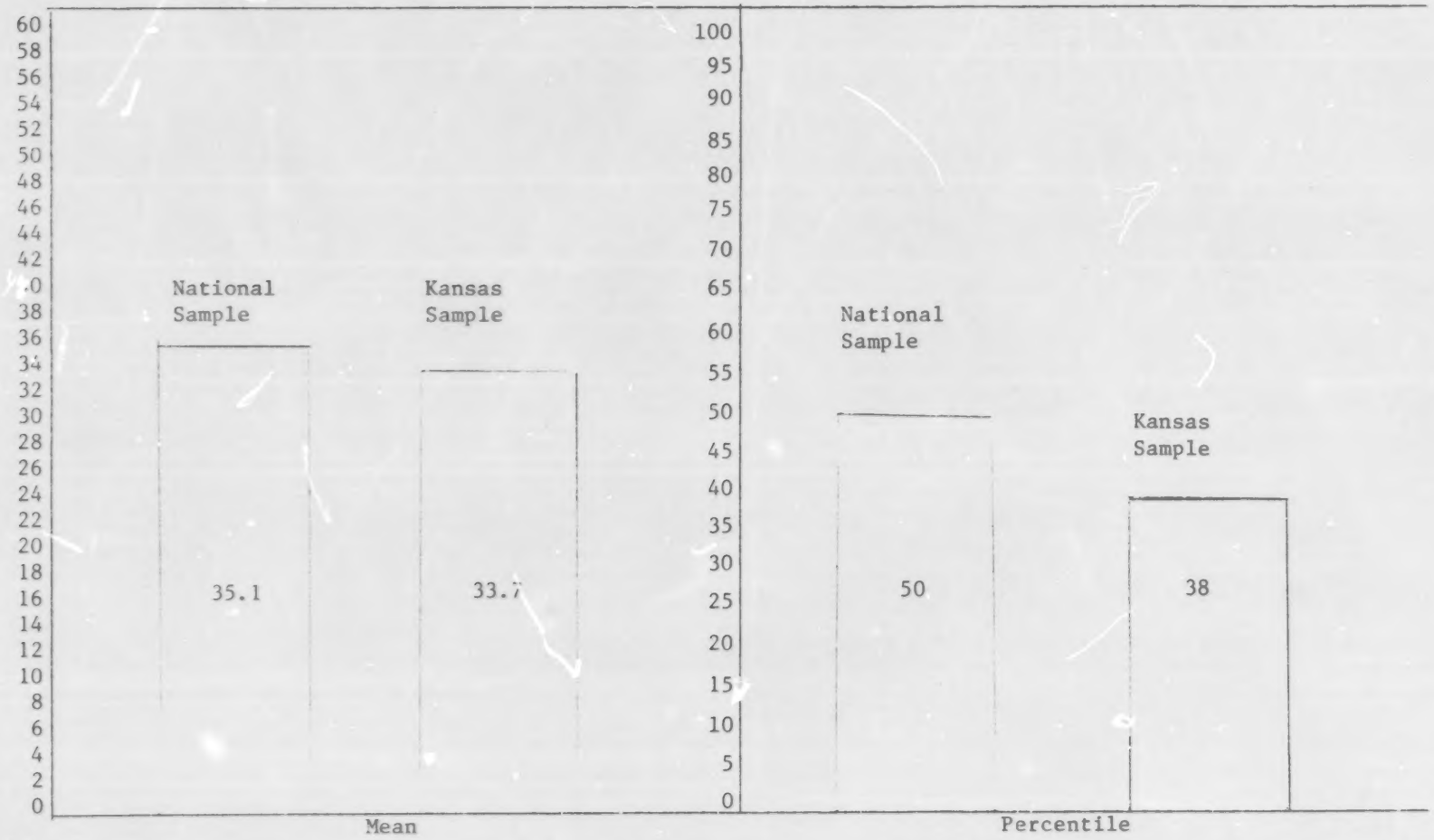
Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
3, 8, 27, 61, 62, 63, 64, 65, 66	demonstrate a knowledge of the foundation of health, safety, and first aid.	53

AAHPER Cooperative Physical Education Test--Grade 12

A review of the results of this test shows the Kansas sample falling below the national norm group by 1.4 points. The national group scored a mean of 35.1, while the Kansas sample scored a mean of 33.7. This placed Kansas in the 38th percentile nationally.

The item analysis of the objectives shows the Kansas sample scoring at or above the fifty percent-correct range on five of the seven objectives measured, and within the thirty percent-correct range on two--knowledge of performance of basic sports skills, and understanding of participation in activities and effects of participation.

Kansas Learner Needs Assessment Study
State Report
Histograms



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Grade 12 Test Physical Education

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Physical Education

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
45, 55	demonstrate a knowledge of performance of basic sports skills.	35.9
10, 23, 24, 59	demonstrate a knowledge of movement skills in strategy & activities patterns.	52.1
4, 11, 15, 26, 37	demonstrate a knowledge of body mechanics, rules & procedures, & protective requirements.	65.3
1, 2, 6, 9, 12, 13, 16, 17, 25, 27, 28, 36, 44, 46, 47, 48, 52	demonstrate an understanding of the effects of immediate activity.	59.9
5, 8, 21, 29, 30, 42, 50, 54	demonstrate an understanding of long term health & appearance.	54.3
3, 7, 31, 32, 39, 40, 56, 57, 58	demonstrate an understanding of capacity & effort in physical activity.	53
8, 14, 19, 20, 22, 33, 34, 35, 38, 41, 43	demonstrate an understanding of participation in activities & effects of participation.	30.4

Career Education Needs Assessment Test--Grade 12

The Career Education Needs Assessment Test is constructed differently for grade 12 than that for grade 6. The twelfth-grade test contains two distinct sections. Items one-through-ten and 21 through 25, question the students, through multiple choice format, on their understanding of the differing nature of various careers. A mean score and item analysis of the objective are available for this section. They are as follows.

No. Items	Possible Right	Mean	S.D.
15	15	12.47	2.58

These results indicate that the total Kansas sample population did very well on this test. This is borne out by the analysis of the objective measured. On the combined average percent correct total for the fifteen questions, the sample scored an 83.27 percent correct total.

The second portion of the test, items 11-20, question the students on their experience with various careers. These questions have been reproduced on the following page with the corresponding percentage of students who indicated they had no experience, limited experience or considerable experience with the careers mentioned.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Career Education

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct			Comments
1-10, 21-25	The student will demonstrate an understanding of the differing nature of various careers.	83.27			
11-20	The student will demonstrate experience with various types of careers.	A	B	C	A=no experience
11	repair furniture, woodworking.	47	38	14	B=limited experience
12	fix mechanical things around the house.	35	42	22	C=considerable experience
13	work with elderly or sick.	51	33	15	
14	work with young children.	18	43	39	
15	had regular paying job for 3 months or more.	17	15	67	
16	engaged in promotional or sales activities.	33	37	29	
17	performed secretarial or clerical responsibility.	50	30	20	
18	did volunteer work.	27	47	25	
19	raised animals.	16	32	51	
20	made drawings or designs.	38	38	23	

Nutrition Evaluation--Grade 12

Because this test was specially constructed for use in this study no comparative norm data are available. The grade 12 results on this test are as follows:

No. Items	Possible Right	Mean	S.D.
60	60	27.0	7.8

A review of the item analysis reveals a mixed performance on the objectives. Of the ten objectives measured, the students showed average performance on five and weak to marginal performance on the others.

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Nutrition

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
1, 8, 10, 13, 31, 34, 35, 39, 51	demonstrate a knowledge of the nutrients & their uses.	56.4
17, 18, 23	demonstrate a knowledge of the nutrient content of foods.	56.9
2, 7, 12, 14, 21, 25, 41, 52, 54, 59	demonstrate a knowledge of the sources & uses of essential vitamins.	39
3, 26, 36, 38	demonstrate a knowledge of the sources & uses of essential minerals.	54.6
11, 19, 27, 33, 42	demonstrate an understanding of the effects of poor nutrition.	26.7
16, 29, 32, 37, 50	demonstrate an understanding of the balance between diet & weight.	49
20, 22, 24, 28, 43, 44, 45, 46, 48, 49, 53, 55, 57	demonstrate a knowledge of food values & food needs of the body.	48.5
4, 6, 40, 47, 60	demonstrate an understanding of balanced meals & the Basic 4 Food Groups.	34
9, 15	demonstrate a knowledge of food processing.	37.9
5, 30, 56, 58	demonstrate an understanding of the digestion of foods.	39.3

Tennessee Self-Concept Scale--Grades 6 and 12

On the Tennessee Self-Concept Scale the sixth-grade means for each subscale were within one standard deviation of each of the national norm means. However, all of the Kansas means for grade 6 and 12, were somewhat lower than the Tennessee normative means and two Kansas means for grade 6, (118.08, 62.63) were almost one standard below the normative means (127.10, 70.33). These two weak subscale scores were the Identity (Row 1) Score and the Moral-Ethical (Column B) Self Score, respectively. At the twelfth grade level one weak scale, that of behavior (Row 3) was significant.

Kansas Learner Needs Assessment Study
State Report
Summary Sheet for:
Tennessee Self-Concept Scale
Grade 6

Name of Subscale	Number Items	Norm Mean	Kansas Mean	Norm S.D.	Kansas S.D.	Number of Students	Source of Test
Grade 6							
Self-Criticism Score		35.54	35.63	6.70	5.78	737	
Total Positive Score		345.57	320.57	30.70	36.22	"	
Row 1 Identify		127.10	118.08	9.96	13.91	"	
Row 2 Self-Satisfaction		103.69	100.18	13.79	16.05	"	
Row 3 Behavior		115.01	102.31	11.22	12.45	"	
Column A Physical Self		71.78	67.3	7.67	9.19	"	
Column B Moral-Ethical Self		70.33	62.63	8.70	8.51	"	
Column C Personal Self		64.55	63.14	7.41	8.43	"	
Column D Family Self		70.83	65.12	8.43	9.09	"	
Column E Social Self		68.14	62.39	7.86	8.1	"	
Distribution Score		120.44	110.82	24.19	29.69	"	

Kansas Learner Needs Assessment Study
State Report
Summary Sheet for:
Tennessee Self-Concept Scale
Grade 12

Test	Number Items	Norm Mean	Kansas Mean	Norm S.D.	Kansas S.D.	Number of Students	Source of Test
Grade 12							
Self-Criticism Score		35.54	36.76	6.70	5.53	496	
Total Positive Score		345.57	325.36		32.86	"	
Row 1 Identify		127.10	121.27	9.96	11.81	"	
Row 2 Self-Satisfaction		103.67	99.77	13.79	14.3	"	
Row 3 Behavior		115.01	104.32	11.22	12.25	"	
Column A Physical Self		71.78	67.36	7.67	8.14	"	
Column B Moral-Ethical Self		70.33	64.49	8.70	8.17	"	
Column C Personal Self		64.55	64.01	7.41	7.79	"	
Column D Family Self		70.83	64.9	8.43	8.89	"	
Column E Social Self		68.14	64.6	7.86	7.79	"	
Distribution Score		120.44	105.44	24.19	26.92	"	

Summary

In summary then, in the area of Health, the sixth-grade performance was comparable to that of the national norm group. The twelfth-grade performance, as analyzed by percentages-correct on the learning objectives, showed low understanding of objectives concerning knowledge of the sense organs and the digestive system and a good understanding of the objective related to knowlege of major health problems.

Both the sixth- and twelfth-grade Kansas samples showed means within a few points of the national norm means in the area of Physical Education.

For the content area of Career Education, both the sixth- and twelfth-grade samples showed adequate attainment levels on the learning objectives, with the twelfth-grade percentage-correct of 83.3% reflecting a good understanding of that content area.

Percentage-correct averages in the area of Nutrition showed a wide range of attainment for both the sixth- and twelfth-grade samples. Areas of weakness for the sixth-grade sample concerned an understanding of the sources and uses of essential minerals and vitamins. Low attainment objectives for the twelfth-grade concerned an understanding of the effects of poor nutrition, of balanced meals and the basic four food groups. Areas of strength for the sixth-grade sample were those concerned with an understanding of the digestion of food and of the nutritional content of food. Strong areas for the twelfth-grade Kansas sample concerned a knowledge of nutrients and their use, and a knowledge of the nutrient content of foods.

A separate Safety test was given to the sixth-grade sample and reflected definite high and low areas of understanding within the separate learning objectives for Safety. Areas of weakness concerned a knowledge of traffic safety and of first aid procedures. Areas of strength were those dealing with an understanding of traffic signs and accidents, a knowledge of traffic hand signals and disaster safety practices.

In the area of self-concept both the sixth- and twelfth-grade samples showed Tennessee Self-Concept Subscale means which were within the normal range. However, all scores tended to be somewhat lower than those of the national norm group. Two low 6th grade means approached significance; these concerned the Identity Subscale and the Moral-Ethical Subscale. One low 12th grade mean was also approaching statistical significance. This was that of the Behavior Scale.

Kansas Learner Needs Assessment Study
State Report
Summary Sheet for:
Life Sciences
Grade 6 & 12

Test	Number Items	National* Mean	Kansas Mean	National* S.D.	Kansas S.D.	Number of Students	Source of Test
Grade 6							
AAHPER Coop. Health Test	50	39.1	37.8	8.0	9.0	574	Standardized
AAHPER Coop. Physical Ed.	60	38.6	35.2	6.9	9.4	592	Standardized
Career Ed. Needs Assessment	46	-	21.96	-	5.35	587	Standardized
Nutrition Evaluation	55	-	23.9	-	7.2	584	Locally produced
Safety Evaluation	50	-	23.9	-	6.7	582	Locally produced
Grade 12							
AAHPER Coop. Physical Ed.	60	35.1	33.7	8.0	8.2	447	Standardized
Career Ed. Needs Assessment	25	-	12.47	-	2.58	449	Standardized
Health & Safety Evaluation	66	-	31.6	-	7.6	451	Locally produced
Nutrition Evaluation	60	-	27.0	-	7.8	442	Locally produced

*When Available

VI. ARTS

Chapter VI

Arts

Introduction

The music and arts assessment for grades 6 and 12 was carried out in April of 1976. Approximately 1500 students were tested against some 54 learning objectives determined to be the skills that students at those levels should have mastered. The development of the student learner objectives were derived from the State-wide Goals for Education in Kansas for music and art.

Selection of Test Instruments

Following a review of the literature, the Colwell Music Achievement Test was selected for use at both the sixth- and twelfth-grade levels. A Visual Arts Evaluation Test was specially constructed for use at both grade levels.

Description of Instruments

Music Evaluation. The Music Evaluation Test is a series of four subtests with several content parts within each subtest. The subtests and content parts are as follows:

Test 1, 68 items
- Part 1: Pitch Discrimination
- Part 2: Internal Discrimination
- Part 3: Meter Discrimination

Test 2, 72 items
- Part 1: Major-Minor Mode Discrimination
- Part 2: Feeling for Tonal Center
- Part 3a: Auditory-Visual Discrimination - Pitch
- Part 3b: Auditory-Visual Discrimination - Rhythm
- Part 3: Total

Test 3, 75 items
- Part 1: Total Memory
- Part 2: Melody Recognition
- Part 3: Pitch Recognition
- Part 4: Instrument Recognition

Test 4, 84 items
- Part 1a: Musical Style-Composers
- Part 1b: Musical Style-Texture
- Part 1: Total

Part 2: Auditory-Visual Discrimination
Part 3: Chord Recognition
Part 4: Cadence Recognition

The Music Evaluation Test was administered by having the students listen to records of tones, melodies, composers, meter phrases, and musical styles and recording their answers to the written questions on standardized answer sheets.

Visual Arts Evaluation. This 60-item multiple-choice test was developed for use in their study. Items one through 30 present a series of pictures or designs about which the student must answer a spcific question concerning shapes used, types of lines used, balance, rhythm, motion, harmony, variety, and patterns. Items 31 through 43 contain a statement for which the student must choose the correct answer. These items concern primary, secondary, and intermediate colors, tints, hues, intensity, cool and warm colors and their use, effects of colors, combinations of colors and their effects. Items 44 through 60 present reproduction of art works about which the student answers questions.

Results

It is important to note that the same music and visual arts test instruments were administered to both grades six and twelve. Because of this the results are arranged according to test and not grade level.

The results of the music evaluation subtest are presented in summary sheets of mean analysis by objective. Four summary sheets, each relating to the four subtests, contain Kansas and national mean performances for both grades 6 and 12.

The results of the Visual Arts Evaluation are presented in comparative means and standard deviation for grades 6 and 12, as well as comparative item analysis of the objectives.

Music Evaluation--Grades 6 and 12

For the sixth-grade sample, there were no appreciable differences between the Kansas means and those of the national norm group. All of the means for Kansas' students fell within half a standard deviation from the national mean, placing the Kansas means within the 30th to the 70th percentile compared to the norm group for the test. The part and total subtest Kansas means fell only slightly above or below the national means on all four music subtests, and for all the parts of the subtest.

For the twelfth-grade Kansas sample, the subtest means were not notably higher or lower than those of the national norm's means on subtests one and three. However, on subtests two and four the Kansas mean scores are eleven and eight points lower respectively. These differences are within one-half standard deviation of the national mean, placing the Kansas sample at about the 30th percentile. These somewhat lower means are fairly evenly distributed throughout the parts of the two subtests with all Kansas part-means somewhat lower than the national part-means for each of these two subtests.

The Kansas Learner Needs Assessment Study
State Report
Summary Sheet of Music Evaluation
Mean Analysis
Grades 6 & 12

usic Evaluation Test 1

Item Number(s)	Music Evaluation Subtest	Objective	Nat'l. Mean Gr. 6	Kansas Mean Gr. 6	Nat'l. Mean Gr. 12	Kansas Mean Gr. 12
		The student will demonstrate:				
1-25	pitch discrimination	pitch discrimination by comparing two tones and identifying which tone is higher or whether both tones are the same; comparing three tones and identifying whether the first, second, or third tone is the lowest.	17.28	17.77	19.73	20.19
26-53	interval discrimination	interval discrimination by listening to a three tone pattern and identifying a pattern than is in scale, a pattern that leaps, or a pattern that is in doubt; by listening to a phrase and identifying if the phrase is in scale order, if the phrase leaps, or if the phrase is in doubt.	15.45	14.17	17.50	15.43
54-68	meter discrimination	discrimination of double and triple meter by listening to a phrase and identifying if it moves in two's, in three's, or if the movement is in doubt.	17.58	16.06	21.06	20.13
Total Mean			50.31	47.87	58.31	55.80

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State Report

Mean Analysis

Music Evaluation Test 2

Item Number(s)	Music Evaluation Subtest	Objective	Nat'l. Mean Gr. 6	Kansas Mean Gr. 6	Nat'l. Mean Gr. 12	Kansas Mean Gr. 12
		The student will demonstrate:				
1-28	major-minor mode discrimination	Major-minor mode discrimination by listening to two chords and identifying whether they are major or minor mode; by listening to a phrase and identifying if it is in major mode, in minor mode, or if it changes mode.	15.22	13.79	18.83	16.15
29-48	feeling for tonal center	feeling for tonal center by listening to four chords and identifying whether the first, second, third, or none of the notes is the key tone, by listening to a phrase and identifying whether the first, second, third, or none of the notes is the key tone.	7.17	7.56	11.05	9.45
49-60	auditory and visual discrimination of pitch	auditory and visual discrimination of pitch by listening and viewing four measures and identifying every measure played differently in pitch from the notation.	10.14	11.11	16.93	15.56
61-72	auditor and visual discrimination of rhythm	auditory and visual discrimination of rhythm by listening to and viewing four measures played differently in rhythm from the notation.	10.56	10.92	25.02	19.39
Total Mean			43.10	42.62	71.83	60.80

Mean Analysis

ısic Evaluation Test 3

Item Number(s)	Music Evaluation Subtest	Objective	Nat'l. Mean Gr. 6	Kansas Mean Gr. 6	Nat'l. Mean Gr. 12	Kansas Mean Gr. 12
		The student will demonstrate:				
1-20	tonal memory	tonal memory by listening to a solid chord and an arpeggiated chord and deciding if the first, second, third, or fourth note of the arpeggiated chord is changed from the notes in the solid chord, or if no note is changed.	8.88	9.27	13.14	12.11
21-40	melody recognition	melody recognition by listening to a melody played alone, then harmonized, and in the harmonized version decide if the melody is in the highest, middle, or lowest part, or if the melody is in doubt.	8.19	8.40	11.32	10.41
41-60	pitch recognition	auditory-visual pitch recognition by listening to the key tone, determining the pitch of the second note, and then determining if the first, second, third, or none of the tones heard following the key is the second tone.	4.69	6.79	10.40	9.60
61-75	instrument recognition	recognition of solo instruments by listening to a musical selection featuring one instrument and identifying if the instrument is one of four given; accompanied instruments by listening to a musical selection featuring one instrument with orchestral accompaniment and identifying the instrument from among four given.	5.79	5.84	9.13	8.63
Total Mean			27.17	30.33	43.46	40.82

VI-6

Music Evaluation Test 4

Mean Analysis

Item Number(s)	Music Evaluation Subtest	Objective	Nat'l. Mean Gr. 6	Kansas Mean Gr. 6	Nat'l. Mean Gr. 12	Kansas Mean Gr. 12
		The student will demonstrate:				
1-20	musical style composer	recognition of a musical style of a composer by listening to a musical excerpt and identifying the composer's style from among four choices given.	6.98	6.05	8.72	6.90
21-40	musical style texture	recognition of a texture of musical style by listening to a musical excerpt and identifying whether it is monophonic, homophonic, polyphonic, or if the texture is in doubt.	9.90	8.52	14.29	12.86
41-54	auditory-visual disc.	auditory and visual discrimination of rhythm by listening to and viewing four measures and identifying every measure played differently in rhythm from the notation.	4.88	5.16	9.58	6.12
55-69	chord recognition	recognition of chords by listening to one chord followed by three tonal chords and identifying the chord that sounds like the first chord.	8.92	9.46	12.69	11.27
70-84	cadence recognition	recognition of cadence by listening to musical phrase and identifying if the cadence is a full cadence, half cadence, a deceptive cadence, no cadence, or if cadence is in doubt.	6.18	6.53	8.25	8.80
Total Mean			36.49	35.72	52.63	44.66

Visual Arts--Grades 6 and 12

The results of the Visual Arts Evaluation are as follows:

	No. Items	Possible Right	Mean	S.D.
Grade 6	60	60	29.27	5.68
Grade 12	60	60	38.14	6.55

There was considerable variation among the percentages-correct obtained on the objectives for Visual Arts by the 6th grade sample. The percentages ranged from 21% to 82% correct, with the highest (at or above 60%) percentages as follows:

ability to identify kinds of line in design and other works of art.	73.5% correct
ability to identify repeat pattern or rhythm in design or other works of art	82% correct
ability to identify the type of balance in design or other works of art	60.2% correct

Those objectives with the lowest percentages-correct (below 40%) are as follows:

ability to identify value in design or other works of art	38% correct
an understanding of the three principles of color theory	32% correct
knowledge of primary pigment color and pigment mixtures	30.2% correct
an understanding of color combinations	21% correct
ability to identify the type of art expression or the type of subject matter used in a design	39% correct
ability to identify a well-known work of art by title	38% correct
ability to identify a well-known work of art by artist	32.5% correct
ability to identify the period or movement within which a work of art was produced	31% correct
ability to identify the theme of a work of art	31% correct

The twelfth-grade sample achieved relatively high (60% or more) percentages-correct on the following learning objectives:

identify kinds of line in design and other works of art	78.2% correct
identify kinds of shape in design and other works of art	67.8% correct
identify kinds of texture in design and other works of art	69.5% correct
identify repeat patterns or rhythm in design or other works of art	92% correct

recognize the use of art elements and size relationships to create the effect of space in design or in other works of art	78.8%	correct
demonstrate an understanding of the effects of color	63%	correct
identify the type of balance used in a design or other work of art	73.8%	correct
identify a specific art form or specific type of work within an art form	65%	correct
identify the type of art expression or the type of subject matter used in a design or other work of art	65%	correct

The one objective upon which the twelfth-grade Kansas sample scored a relatively low (below 40%) percentage-correct was:

demonstrate an understanding of color combinations	38%	correct

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State Report
Item Analysis

Grade 6 Test Visual Art

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will demonstrate:	
1, 2, 3, 7, 8, 50	ability to identify kinds of line in design & other works of art.	73.5
6, 9, 12, 18, 29, 46	ability to identify kinds of shape in design & other works of art.	53.6
4, 57	ability to identify kinds of texture in design & other works of art.	58.5
13, 17	ability to identify repeat pattern or rhythm in design or in other works of art.	82
22, 36	ability to identify value in design or in other works of art.	38
5, 10, 11, 14, 21	ability to recognize the use of art elements & size relationships to create the effect of space in design or in other works of art.	51.8
22, 35, 36, 38	an understanding of the three principles of color theory.	32
31, 32, 33, 34, 37	knowledge of primary pigment color & pigment mixutures (secondary & intermediate).	20.2
39, 40, 41	an understanding of the effects of color.	40
42, 43	an understanding of color combinations.	21
19, 20, 23, 24, 49	ability to identify the type of balance used in a design or other work of art.	60.2
15, 26, 27, 28	ability to recognize the use of variety, unity, dominance or harmony in design or other works of art.	45.7
25, 30	ability to recognize the use of motion or movement in a design or other work of art	48

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 6 Test Visual Art. (cont'd)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
45, 47, 48	ability to identify a specific art form or specific type of work within an art form.	48.6
46, 58	ability to identify the type of art expression or the type of subject matter used in a design or other work of art.	39
51, 55, 59	ability to identify a well-known work of art by title.	38
52, 60	ability to identify a well-known work of art by artist.	32.5
53. 56	ability to identify the period or movement within which a work of art was produced.	31
54, 61	ability to identify the theme of a work of art.	31

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Visual Arts

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
	The student will:	
1, 2, 3, 7, 8, 50	identify kinds of line in design & other works of art.	78.17
6, 9, 12, 18, 29, 44	identify kinds of shape in design & other works of art.	67.83
4, 57	identify kinds of texture in design & other works of art.	69.5
13, 17	identify repeat patterns or rhythm in design or other works of art.	92
22, 36	identify value in design or other works of art.	47
5, 10, 11, 14, 21	recognize the use of art elements & size relationships to create the effect of space in design or in other works of art.	78.8
22, 35, 36, 38	demonstrate an understanding of the three principles of color theory.	45.5
31, 32, 33, 34, 37	demonstrate knowledge of primary pigment color & pigment mixtures (secondary & intermediate).	53.8
39, 40, 41	demonstrate an understanding of the effects of color.	63
42, 43	demonstrate an understanding of color combinations.	38
19, 20, 23, 24, 49	identify the type of balance used in a design or other work of art.	73.8
15, 26, 27, 28	recognize the use of variety, unity, dominance, or harmony in design or other works of art.	53.75
25, 30	recognize the use of motion or movement in a design or other work of art.	51.5

The Kansas Learner Needs Assessment Study
State Report
Item Analysis

Grade 12 Test Visual Arts (cont'd.)

Item Number(s)	Learning Objective Measured	Combined Average Percent Correct
45, 47, 48	identify a specific art form or specific type of work within an art form.	65
46, 58	identify the type of art expression or the type of subject matter used in a design or other work of art.	65
51, 55, 59	identify a well-known work of art by title.	45
52, 60	identify a well-known work of art by artist.	41.5
53, 56	identify the period or movement within which a work of art was produced.	51
54, 61	identify the theme of a work of art.	53.5

Summary

To summarize then, in the area of Music Evaluation, both the sixth and twelfth grade samples showed total test means, subtest means and part-means which were not appreciatively different from the national norm group means.

Although no normative data was available for the Visual Arts Evaluation test, analyses were made by examining the percentages-correct obtained in the Visual Arts learning objectives. These analyses showed considerable variation among the percentages-correct obtained by the sixth-grade sample, a range of 21% to 82%. Those objectives showing weakness involved the following: understanding of the three principles of color theory, of color combinations, of primary pigment color and pigment mixtures, ability to identify value, type of art expression, type of subject matter used, the theme of a work or design, and identification of a well-known work of art by artist or title. Those objectives upon which the sixth grade sample showed good understanding, however, concerned the identification of kinds of line in design and other works of art, the identification of repeat pattern or rhythm and the type of balance used.

The twelfth grade sample performance in the Visual Arts area showed relatively high (60% or more) percentages-correct on nine of the nineteen learning objectives in this content area, and relatively low for the objective concerned with the demonstration of an understanding of color combinations.

VII. SUMMARY

CHAPTER VII

SUMMARY REPORT OF THE KANSAS LEARNER NEEDS ASSESSMENT STUDY - 1974-1979

The Study Was Carried Out by the University of Kansas

for the

Kansas State Department of Education

January, 1979

INTRODUCTION

The study to assess the educational performance level of the State's elementary and secondary populations was specified in the requirements for Title III of the Elementary and Secondary Education Act of 1965 and by the Kansas State Board of Education in July, 1972 when the Board adopted state-wide goals for education, one of which was that there should be an ongoing educational needs assessment program in the State of Kansas. The goals adopted in 1972 were based primarily upon the results of the State Educational Evaluation of Kansas (SEEK) Report, and the goal-setting activities carried out by the Kansas State Department of Education.

The major purposes of the present study were to: (1) provide a quantitative assessment of the educational performance of students in grades six and twelve; (2) identify specific strengths and weaknesses in educational achievement; (3) provide information for making administrative decisions pertinent to the educational curriculum, and (4) provide a student needs data base upon which future state-wide educational programs might be based. The study was conducted by Dr. Anne Spangler and directed by Dr. Larry Havlicek of the Department of Educational Psychology and Research at the University of Kansas under contractual agreements with the Kansas State Department of Education.

The basic needs assessment model that was used for the Kansas Learner Needs Assessment Study is essentially a post hoc criterion model since no a-priori criterion performance levels were set. As indicated above, the main purposes of the study were to provide data pertinent to the educational performance of sixth- and twelfth- grade students and no attempt was made to determine what would constitute an acceptable level of performance before the data was collected. Since the establishment of acceptable levels of performance was beyond the scope of this study, the results presented in this report can serve as the basis for establishing educational emphases and priorities for the State of Kansas.

Begun in 1972, the first two years of the study centered around the organization and development of the needs assessment design, the identification of specific objectives, and the development and identification of test instruments. Actual testing began in April of 1972 and continued through April of 1978. During this time period, more than 6,000 sixth and twelfth grade students from 33 school districts underwent testing in 13 key areas of educational endeavor. The basic sampling procedure that was used was a stratified cluster sampling in order to obtain a representative sample of all students in the State.

Students were assessed in the following 13 areas which were listed as sub-goals adopted by the Board of Education on July 6, 1972: Arts and Humanities, Basic Communication Skills, Basic Mathematics Skills, Career Preparation, Consumer Preparation, Environmental Education, Health, Nutrition, Preparation for a Changing Society, Safety, Self-Image, Science, and Values and Citizenship. To assess students in these areas, tests were identified or developed based upon two criteria: (1) that the test measure the performance outcomes specified by the learner objective, and (2) that the tests selected for use in both the sixth and the twelfth grades approximate one another in form and content. Twenty-two published standardized tests were selected for use in this study and eleven tests were developed specifically for the project. A cyclical testing program was used during the four years of testing due to the time factor involved in selecting, developing, scheduling, administering, retrieving, and analyzing the tests and the test data. The tests were administered in April of each year by classroom teachers or other school personnel designated as test administrators by the local district.

A complete item analysis was done for each test which included the level of difficulty for each item, the reliability of the test, the discrimination index for each item, and the mean, standard deviation, and frequency distribution for total scores. The data from standardized tests were converted to percentile ranks and grade equivalent scores wherever these were provided. Each test item was referenced to its appropriate objective. The percent of students correctly responding to each item for an objective was computed and these percents were then combined and averaged for the items for a specific objective. The averaged level of difficulty for the items making up a specific objective provided the data for comparing students' performance strengths and weaknesses overall of specific objectives.

The most important feature of this study was that the performance of students was analyzed for 540 specific objectives within the 13 major areas of the study. For example in the Basic Communication Skills area, students were assessed for specific objectives such as being able to use pronouns, verbs, and specific spellings such as words with double letters. In the area of Basic Mathematics Skills, students were assessed for specific abilities such as adding, multiplying, and dividing whole numbers and fractions. The report presented the results for each of the 540 specific objectives as well as for overall relative performance in each of the 13 areas.

This summary will report the main findings of the study and will identify areas in which specific weaknesses or strengths were found for each of the 13 curricular areas covered in the study. A table summarizing the results for the standardized tests is also provided at the end. This table indicates the national mean, the mean for the Kansas sample, and the percentile rank for the Kansas mean based upon national norms. This table only includes those tests for which norms were available. For the areas of reading and mathematics, the results were averaged for the two years that these tests were given. For all of the other tests, the results are for the testings for only one year.

A copy of the complete study is available if requested from:

Educational Improvement and Development Section
Kansas State Department of Education
120 East Tenth
Topeka, Kansas 66612

READING

Reading comprehension for sixth grade students in Kansas were within an average range -- 37th percentile in 1977 and at the 53rd percentile in 1978 compared to national norms for the Iowa Test of Basic Skills. For the twelfth-grade, students scored at the 38th and 34th percentile respectively for these two years compared to the norms on the Gates-MacGinitie Reading Comprehension Subtest. For various areas included in this content area, the sixth-grade students scored relatively high in the area of spelling, and relatively lower in the areas of capitalization and language usage. At the twelfth-grade level, students were average in all areas with the exception of the area of understanding and knowledge of literature as measured by the Hoskins-Sanders Literature Test.

MATHEMATICS

Compared to the national norms of the Iowa Test of Basic Skills, sixth-grade students in Kansas scored at the 60th percentile for the subtest dealing with mathematics concepts and at the 54th percentile for word problems in mathematics. Sixth-grade students scored relatively high in the areas of basic addition, subtraction, multiplication, rounding whole numbers, equivalence of fractions, and expanded notation. Their performance was relatively lower in the areas of division, problems involving decimals and fractions, and measurements of lengths.

At the twelfth-grade level, students scored at the 31st percentile for mathematics computation and at the 41st percentile for mathematics concepts and problems as measured by the California Achievement Tests. Specific areas in which twelfth-grade students scored relatively high were basic addition, subtraction, multiplication, and division, and understanding of measurements and signs. Specific areas in which these students scored relatively lower were an understanding of place values and bases other than 10, irrational numbers, graphs, and decimals.

SCIENCE

Sixth-grade students were evaluated by a test developed for the Learner Needs Assessment Study and the results indicate that these students score relatively high in the areas of understanding the classification of living things, understanding insects and animals, and an understanding of the solar system. The students included in the sample scored relatively lower in the areas of understanding light and sound, changing states of matter, geological features and processes, and the geological history of the earth. No normative data was available for this test. At the twelfth-grade level, students scored at the 43rd percentile on the Emporia General Science Test. The item analysis revealed that these students scored relatively high in the areas of understanding of genetics, understanding of the states of matter, understanding of the eye and its functions, and an understanding of electricity and engines. They scored relatively lower in areas of understanding of work and efficiency, principles of sound, and knowledge of plant parts and their functions.

HISTORY

Students included in the sample scored relatively low in the area of history. On the Hollingsworth-Sanders Intermediate History Test, the sixth graders were at the 20th percentile compared to the norms for the test, and at the 12th grade level the students scored only at the 24th percentile on the Emporia-American History Test. With regard to specific objectives, sixth-grade students scored relatively high on only one objective dealing with understanding of the conflict of 1812. They scored relatively low on understanding of the colonial and revolutionary war periods, events and conditions leading to the Civil War, and on understanding human and natural sciences. At the twelfth grade, students scored relatively high on objectives dealing with an understanding of the American political system, agriculture and natural resources, human rights and resources, in understanding American holdings and acquisition of possessions, the ability to synthesize knowledge of international affairs, and an understanding of World War I.

PHYSICAL EDUCATION

The AAHPER Cooperative Physical Education Test was used at both the sixth- and twelfth-grade levels and Kansas students scored at the 29th and 38th percentiles respectively on this test. For specific objectives in this area, sixth-grade students scored relatively high on objectives dealing with an understanding of activity participation and effects of participation, capacity for effort in physical education activities, immediate effects of activity, and long-term health and appearance. They scored relatively lower on the objectives dealing with knowledge of body mechanics, rules, and procedures, and an understanding of basic sports skills. The twelfth-grade level scored relatively high in the understanding of body mechanics, rules and procedures, and in the effects of immediate activity, and relatively lower on the objectives dealing with an understanding of participation in activities and effects of participation, and knowledge of performance of basic sports skills.

HEALTH AND SAFETY

At the sixth-grade level the AAHPER Cooperative Health Test was used. The Health and Safety Evaluation, specially constructed for uses in this study was administered to grade 12. Thus, the only comparison with national norms was for the first test mentioned above, on which sixth-grade students in the sample scored at the 44th percentile. On specific objectives, the sixth-grade students scored relatively high on health objectives dealing with safety and first aid, mental health, consumer health, growth and development, and knowledge of drug use and abuse, and relatively lower on understanding of international health. In the area of safety, these students scored relatively high on objectives dealing with traffic signs and disaster safety practices, and relatively low on objectives dealing with traffic safety and first aid practices. At the twelfth-grade level, students scored relatively high on objectives dealing with an understanding of major health problems, and relatively lower on objectives dealing with knowledge of the digestive system and sense organs.

VALUES AND CITIZENSHIP

This area was assessed only at the sixth-grade level using a test developed for the study, thus no norms were available for comparison of results. However, the students included in the sample scored relatively high on objectives dealing with understanding the needs of people, economics, and of the past as well as knowledge of Federal leaders of the United States. They scored relatively low on objectives dealing with an understanding of the branches of the U.S. government, of population, and the development of societies.

NUTRITION

A specially developed test was used for the objectives in this area, thus no normative data is available. However, at the sixth-grade level, students scored relatively high on specific objectives dealing with knowledge of the nutrient content of foods and an understanding of the digestion of foods, and relatively low on objectives dealing with sources and uses of essential minerals, and sources and uses of essential vitamins. At the twelfth-grade level, students scored relatively high on objectives dealing with knowledge of nutrients and their uses, the nutrient content of foods, and the sources and uses of essential minerals. They scored relatively lower on objectives dealing with the effects of poor nutrition, an understanding of balanced meals and the basic food groups, knowledge of food processing, and understanding of the digestion of foods.

CAREER EDUCATION

The Career Education Needs Assessment test was used for both grade levels. No normative data was available for this test. Students scored nearly 50 percent correct on the average for the three objectives dealing with career education, and at the twelfth-grade level students scored on the average 83 percent correct on the only objective dealing with an understanding of the differing nature of various careers. On the objectives dealing with types of work experience, the twelfth-grade students indicated that they had considerable experience in a regular paying job for three months or more. However, only a few students indicated that they had experience in woodworking and furniture repair, working with elderly or sick people, or had performed secretarial or clerical work.

CONSUMER EDUCATION

The area of consumer competence was assessed only at the twelfth-grade level using the Test of Consumer Competencies. The students included in the sample scored at the 51st percentile on this test, and on specific objectives they scored relatively high on demonstrating consumer knowledge of recreation, insurance, the consumer in society, and consumer credit. They scored relatively lower on objectives dealing with consumer knowledge of food and housing.

ECOLOGY

Both the sixth- and twelfth-grade students scored slightly higher than the national mean for these tests. On specific objectives, sixth-grade students scored relatively high on specific aspects of ecology such as an understanding of life processes, pollution, and natural resources. They scored relatively low in the areas of understanding geographic evolution and conservation, and on natural balance in ecology. At the twelfth-grade level, students scored relatively high on all objectives including plant and animal dependencies, natural adaptation, and life processes.

ARTS

For both the sixth- and twelfth-grade samples, the Music Evaluation Test and the Visual Arts Evaluation Test were used. The music test is a standardized test but the visual arts test was developed for this study and thus has no norms for comparative purposes. On the music test, there were no appreciable differences between the means for the Kansas sample and the means of the national norm group. However, twelfth-grade students scored relatively low on music subtests two and four dealing with a combination of objectives dealing with major-minor mode discrimination, feeling for tonal center, rhythm discrimination, and with musical style. On the visual arts test, sixth-grade students scored relatively high on objectives dealing with repeat patterns or rhythm in design, identification of kinds of line in design and works of arts, and identification of type of balance in design and art. They did relatively low on objectives dealing with understanding color combinations, identification of works of art and artists, and color theory. At the twelfth-grade level, students scored relatively high on objectives dealing with the use of line, shape, texture, pattern, balance, art forms, and art expression, but scored relatively low on the objective dealing with an understanding of color combinations.

SELF-CONCEPT

The Tennessee Self-Concept Scale was used at both the sixth- and twelfth-grade levels. The results of this study indicated that both groups of Kansas students scored slightly lower than the norms for the test in all of the 11 areas assessed by this instrument. Sixth-grade students were relatively lower on the Identity Scale and the Moral-Ethical Self scale, whereas twelfth-grade students scored relatively lower on the Behavior scale which measures a person's perception of his own behavior.

Summary of Standardized Test Results

	National Mean	Kansas Mean	Percentile Rank for Kansas Mean
A. READING			
Test (Sixth Grade)			
Iowa Test of Basic Skills			
Reading Comprehension	40	39.49	45
Spelling	20	21.08	62
Vocabulary	25	24.38	43
Capitalization	23.5	21.09	31
Usage	15.5	14.47	31
Punctuation	20	20.40	51
Graphs and Tables	15.5	15.68	52
Map Reading	18.5	18.86	53
Reference Skills	34	33.33	38
A Look at Literature	26.52	25.55	42
Test (Twelfth Grade)			
Gates-McGinitie			
Comprehension	32.9	29.66	36
Speed and Accuracy	17.7	16.86	49
Vocabulary	31.5	28.33	36
Hoskins-Sanders Literature	51	45.58	30
B. MATHEMATICS			
Test (Sixth Grade)			
Iowa Test of Basic Skills			
Math Concepts	22.5	24.14	60
Math Problem Solving	14.5	14.86	54
Test (Grade Twelve)			
California Achievement Test			
Math Computation	36.68	33.36	31
Math Concepts & Problems	31.94	29.59	41

	National Mean	Kansas Mean	Percentile Rank for Kansas Mean
C. SCIENCE AND SOCIAL SCIENCES			
Test (Sixth Grade)			
New Mexico Concepts of Ecology Test, Level 1	9.87	10.91	
Hollingsworth-Sanders Intermediate History Test	31	22.11	20
Test (Grade Twelve)			
New Mexico Concepts of Ecology Test, Level 2	12.53	12.96	
Emporia American History Test	72	58.7	24
Emporia General Science Test	51	47.62	43
Test of Consumer Competencies	26.80	26.73	51
D. LIFE SCIENCES			
Test (Sixth Grade)			
AAHPER Coop. Health Test	39.1	37.8	43
AAHPER Coop. Physical Education Test	38.6	35.2	31
Test (Twelfth Grade)			
AAHPER Coop. Physical Education Test	35.1	33.7	43

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